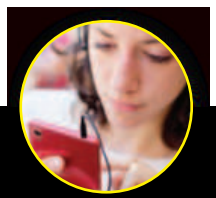
LATEST SMARTPHONES, TABLETS & WEARABLES

# ANDROID ADVISOR

ISSUE 19


## Google's best ever Android phones compared



## Why is my phone...?

We answer your smartphone questions

# Welcome...

At the end of September Google finally unveiled not one but two new Nexus phones, a new Chromecast and Chromecast Audio, and the surprise announcement of the Pixel C tablet. You can read about these great new Marshmallow devices over the following pages.

Another great new phone to grace our presence is the LG V10, aka the LG G4 Pro. We've got all the details on page 18.

Also new and set to fill stockings this Christmas the UK over is Amazon's cheapest ever tablet. The new Fire (see page 22) costs a tiny £49.

If you are buying a new phone or tablet, you may have some questions about using Android. On page 43 we round up some of the most common smartphone questions, covering everything from data usage, roaming and storage problems to overheating or slow devices. Whatever your Android issue, we'll help you find a solution.

There's loads more in this issue, including our world exclusive Marshall London phone review (page 26) – the stylish new device for audiophiles – and reviews of the Wileyfox Swift (page 33) and Vector Watch Luna (page 39).

As always, we hope you've enjoyed this issue of Android Advisor. Feel free to send us your feedback via **facebook.com/AndroidAdvisorUK** or email **marie_brewis@idg.co.uk**.



# Out now:
# Google Nexus 5X vs 6P

We reveal the differences between Google's new phones

Google has unveiled two new Google Android phones, the Nexus 5X (left) and Nexus 6P (right), but how do you know which is for you? Over the following pages we examine the key differences between the two to help you decide.

As we'll see, the 6P is a better-specified phone, and therefore costs more. The 5X costs £339 (16GB, £379 32GB) from the Google Store, while the 6P is priced at £449 (32GB; £499 64GB; £579 128GB) at the Google Store.

## Manufacturer

Both phones are part of Google's Nexus line-up, but Google doesn't actually make the hardware. We have LG to thank for the 5X, and Huawei for the 6P.

## Design

Given the above, it's no surprise that the Nexus 5X and 6P are different in their design. The 5X is plastic, but with a matt finish that feels good in the hand. Meanwhile, the premium 6P has a metal anodised aluminium unibody chassis and a slightly different camera setup at the rear.

Whereas the 5X's camera is centred toward the top of the device and juts out a little, Huawei's Nexus Camera sits in a slightly raised bar at the top of the phone. Both feature a Nexus logo and circular fingerprint scanner on the rear.

The colours in which these phones are available also differ. The 5X comes in Carbon (black), Quartz (white) and Ice (blue), while the 6P is either Aluminium (silver), Graphite (black) or Frost (white).

## Size

The Nexus 5X is smaller and lighter than the 6P, and as we'll get on to next it also has a smaller screen. The 5X measures 147x72.6x7.9mm and weighs 136g, while the slimmer but taller 6P measures 159.3x77.8x7.3mm and weighs 178g.

## Screen

The screen on the Nexus 5X is not only smaller than that of the 6P, at 5.2- against 5.7in, but also lower in resolution. LG has plumped for a full-HD panel with a 1920x1080-pixel resolution and 423ppi pixel density, while Huawei's squeezed in a super-high-resolution Quad-HD AMOLED panel with 2560x1440 pixels and 518ppi density.

Both phones feature a fingerprint-and smudge-proof oleophobic coating, but while the 5X is fitted with protective Gorilla Glass 3, the 6P goes one better with Gorilla Glass 4.

**Nexus 6P**

## Hardware and performance

It's impossible for us to say for sure without having had both devices in our lab, but with its more powerful hardware the Nexus 6P really should be the stronger performer, even despite its larger, higher-resolution screen.

The 5X is fitted with the same hexa-core Qualcomm Snapdragon 808 processor as seen in the LG G4, here clocked at 1.8GHz, while the Nexus 6P gets the second-generation Snapdragon 810 octa-core chip introduced by the OnePlus 2. It runs at a higher clock speed of 2GHz, too.

What's more, while the 5X gets 2GB of DDR3 RAM, the 6P gets 3GB of DDR4 RAM. And graphics are improved, too, with Adreno 418 in the 5X and Adreno 430 in the 6P.

**Nexus 5X**

## Storage

Neither Nexus phone comes with support for microSD, which means you'll have to carefully choose your storage option. If you require a lot of storage then the 6P will be the Nexus for you, available with 32-, 64- or 128GB of storage, while the 5X comes in only 16- and 32GB storage options.

## Battery

Given its larger size, more powerful hardware and higher-resolution screen, it's no surprise that the Nexus 6P has a higher-capacity battery – 3450mAh versus 2700mAh. Both support fast charging, and in a 10-minute charge Google says you'll get up to 3.8 hours use on the 5X, or 7 hours on the 6P.

Once we get these phones into our lab we'll be able to see exactly how the different capacities and hardware affect battery life.

## Selfie cameras

At the front of each new Nexus phone is a selfie camera. Both are very decent, but the Nexus 6P's version can capture more megapixels – 8Mp rather than 5Mp in the 5X. It has a f/2.4 aperture (f/2.0 in the 5X) and can record HD video at 30fps; both feature 1.4µm pixels.

## Audio

Both phones have front-facing speakers, but whereas the 6P has a dual-speaker setup the 5X has just the one speaker. Each phone also features three mics, although they are in different positions. On the 6P two are at the front and one is at the rear, while the 5X sees them situated front, top and bottom.

## What's the same?

Surprisingly, not that much. Both are Nexus phones, and thus they run a vanilla version of Android 6.0 Marshmallow and will always be among the first devices to receive new operating system updates.

The rear-facing Nexus Camera is the same on both phones, and each benefits from the faster Google Camera app. This is a 12.3Mp camera with 1.55µm pixels, f/2.0 aperture, IR laser-assisted autofocus, support for 4K video recording at 30fps and a dual-LED flash.

**Nexus 5X**

Connectivity is the same also. You'll get Cat 6 4G LTE (with a single Nano-SIM slot), dual-band 802.11ac Wi-Fi, Bluetooth 4.2, NFC, GPS and GLONASS, and a digital compass. As for ports, expect a 3.5mm headphone jack and USB-C whichever Nexus phone you buy.

## Verdict

With the Nexus 6P winning every category here, you might think it is clearly the better phone. However, there's a lot to be said for the smaller, lighter design and cheaper price of the 5X. These phones appeal to two different markets. If you want a good all-rounder that's not too expensive and not too big then go for the 5X. If you demand ultimate performance and the latest technology, then the 6P is your only choice.

## Specifications

**Nexus 5X**

- Android 6.0 Marshmallow
- 5.2in Full HD screen
- Qualcomm Snapdragon 808, six-core processor
- 2GB RAM
- 16/32GB storage
- 12.3Mp rear camera with dual-tone LED
- 5Mp front camera
- Fingerprint scanner
- NFC
- 11ac Wi-Fi
- Bluetooth 4.2
- 2700mAh battery
- 147x72.6x7.9mm
- 136g

**Nexus 6P**

- Android 6.0 Marshmallow
- 5.7in Full HD screen
- Qualcomm MSM8994 Snapdragon 810, octa-core processor
- 3GB RAM
- 32/64/128GB
- 12Mp rear camera with dual-tone LED
- 8Mp front camera
- Fingerprint scanner
- NFC
- 11ac Wi-Fi
- Bluetooth 4.2
- 3450mAh battery
- 159.3x77.8x7.3mm
- 178g

# Coming soon: Google Pixel C

A look at Google's upcoming Android tablet

A new Google Pixel C tablet will arrive later this year running Android rather than Chrome OS, Google has confirmed. It will be available in time for Christmas.

## Price

The Pixel C comes in two versions, 32GB and 64GB, priced at $499 and $599 respectively. The

detachable keyboard costs $149. At the time of writing no UK pricing had been announced.

## What we can expect

With the new Pixel C, Google has reimagined the tablet, trying to come up with a design that works for both work and play.

As such, the keyboard is detachable and held on by strong magnets, and adjustable between 100- and 135 degrees, so there's no kickstand to get in the way. The keyboard has a very decent 18.8mm pitch, making for a great touch-typing experience. This has been achieved by taking five less frequently used buttons from the keyboard and placing them on the screen.

The keyboard connects to the tablet over Bluetooth, and charges inductively when closed. All you need is a couple of minutes charge a day, but

even when you don't the battery can last up to two months, according to the company. When you don't need the keyboard it attaches to the rear of the tablet, close to hand but out of the way.

The Pixel C tablet runs not Chrome OS but Google Android – it will ship with the new Android 6.0 Marshmallow out of the box.

It has a 10.2in, 308ppi screen with a bright backlight capable of 500 nits. It is powered by an Nvidia X1 quad-core processor with 3GB of RAM and a Maxwell desktop-class GPU.

There are four mics, allowing for voice interaction from anywhere in the room, and it's easy to check the battery life with a double-tap on the light bar.

The Pixel C will also benefit from software updates every six weeks, so it will only get better.

In common with the new Nexus phones, the tablet supports USB Type-C for data transfer and charging.


# Out now: Chromecast and Chromecast Audio

Google unveils its latest media-streaming dongles

It's been nearly two years since Google unveiled its Chromecast media-streaming dongle), but it has been worth the wait, arriving alongside Chromecast Audio. Over the following pages we reveal the new Chromecast and Chromecast Audio UK release date, price and specifications.

## What is Chromecast?

Chromecast is a £30 dongle that plugs into any HDMI screen enabling you to make a dumb TV smart. All you need is a single HDMI port into which to plug in Chromecast, and a single USB port (or a nearby mains outlet) from which to power it.

In its second-generation, the Chromecast has a new circular design (see opposite) and a built-in HDMI cable, which means you can take it anywhere and plug it into any TV, and then use any device on the network to remotely control it.

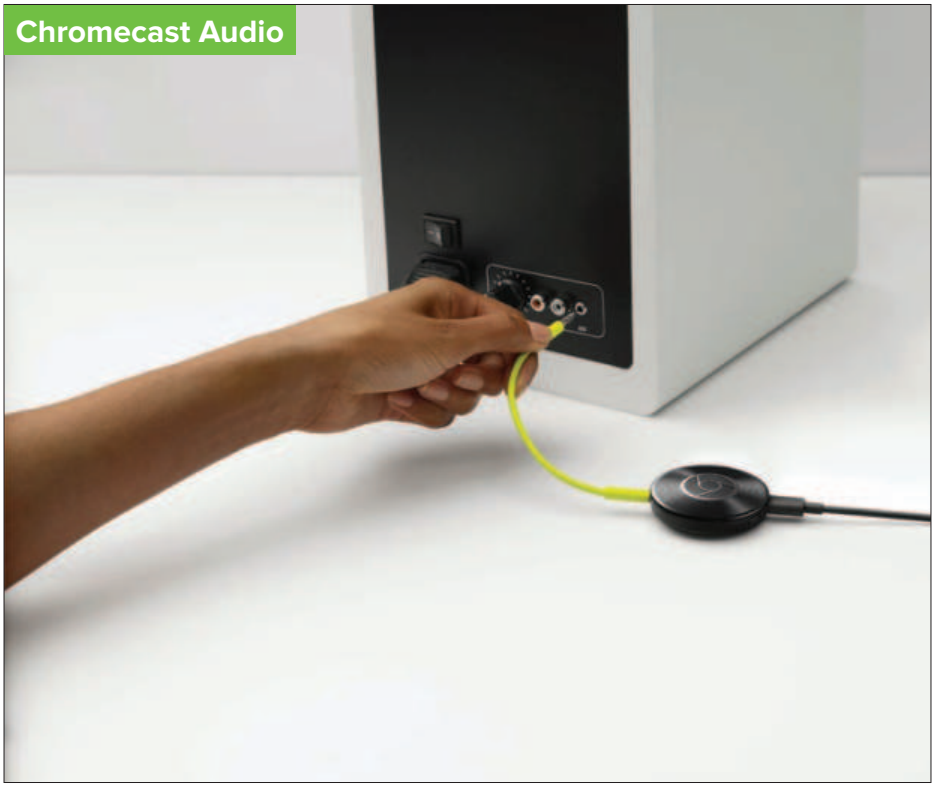
With no user interface of its own (it operates via the newly upgraded Chromecast app you download to your phone or tablet), in essence it's a wireless alternative to connecting your phone or tablet to a TV via an HDMI cable. Google Cast also lets you display anything on your mobile device's screen on the TV or monitor. Well, almost anything – Sky still won't allow you to stream Sky Go over Chromecast, for example.

Apps are the difference between an HDMI cable and Chromecast, however. Not only will you find a Cast icon built right into many apps written to include Chromecast support, but there are also apps built specifically for it.

## What is Chromecast Audio?

Chromecast Audio is a small dongle, also priced at £30, but the difference here is that it handles just audio- and plugs into a speaker rather than a TV. Indeed, it plugs into any home speaker using an AUX cable, then allows you to cast audio to it. You simply plug it into power, connect to a wireless network, and start casting.

## Chromecast Audio



### Price

In common with the original Chromecast, the new Chromecast and its Chromecast Audio sibling cost just £30 each. You can buy them now on the Google Store, with the devices expected to ship within the next few weeks.

### What's new?

There's an all-new design, with a circular body that comes in Lemonade, Coral or Black, and an integrated HDMI cable that means you can take it anywhere and plug it into any PC.

As we suspected, Wi-Fi has been upgraded, with new support for dual-band 802.11ac. Wi-Fi performance also benefits from a new adaptive antenna system.

Plus, it supports higher-quality video and audio, with less buffering. But some of the biggest improvements come in the software.

A redesigned Chromecast app that makes it significantly easier to discover content and apps will roll out for Android and iOS in the next few weeks. You will also be able to see at a glance which apps installed on your phone support Chromecast, search for content by voice, and Google has added new playback controls that allow you to use any device on the network as a remote control for Chromecast.

The touted Fast Play feature is a reality, and can reduce load time by up to 80 percent by automatically beginning to load up an app the second you open it. It also predicts what you might want to watch based on your previous behaviour and can begin loading up, say, the next programme in a TV series you are following.

Gaming has also improved with the new Chromecast, now dependent on your smartphone to do all the legwork, acting as the controller and powering both its own screen and the TV screen. Phones are more than capable of this these days, and their performance only gets better each time you upgrade. Chromecast can also benefit from a phone's accelerometer, gyroscope, touchscreen, camera and other features.

By using your phone as the gaming controller, Chromecast also makes multiplayer games possible – all your friend needs is their phone.


# Coming soon: LG V10

## LG officially confirms its V10 dual-screen smartphone

LG has officially confirmed its V10 dual-screen smartphone, which you might know as the LG G4 Pro. In this feature we've everything you need to know.

### Price

According to LG: "The LG V10 will be available in Korea starting this month [October] followed by

markets such as the United States, China and key countries in Asia, Latin America and the Middle East. Information regarding additional markets and launch dates will be announced locally in the weeks to come."

This is a premium phone (in fact it's the phone that was tipped to be the LG G4 Pro), so don't expect it to come in any cheaper than the £500 LG G4. It will likely be a little more expensive.

An exact release date and price has not been given by the company just yet, but as soon as it has we will publish it here.

## Features

It looks a lot like the LG G4 with its Quad-HD IPS Quantum Display, familiar shape and Rear Key, but the V10 adds into the mix a second screen, dual front cameras and a new fingerprint scanner. There's also a more durable design, with a Dura Guard metal frame and Dura Skin protective coating on the back and bottom of the display. Turn over the V10 and instead of that nasty leather you'll see a textured grid pattern that improves grip in the hand.

The V10 is a premium phone with lots of exciting features, one of the most interesting of which is its second screen. As well as the primary 5.7in Quad HD panel, a second 2.1in IPS panel sits just above the main screen with a matching 513ppi pixel density. This panel can be always-on, even when the primary display is on standby – and it won't affect battery life, according to the company. This second screen is used to display such things as the weather, time, date and battery icon, or it can be used for shortcuts to your favourite apps. If you're watching a

movie or playing games notifications will appear on the second screen so as not to disturb you on the primary panel.

Rather than a single 5Mp selfie camera at the front, the LG V10 has two. With two separate lenses it is able to capture standard 80 degree selfies or perfect wide angle selfies of 120 degrees, without the need to pan the smartphone, which can introduce camera shake. Paired with the 16Mp rear camera, Multi-View Recording lets you capture a scene from all angles, then pick the image you like the best.

LG says its V10 is the first smartphone camera to introduce manual mode for video, as seen with stills in the LG G4. During recording you can adjust the shutter speed, framerate, ISO, white balance and focus; you also have a choice of shooting in HD, full-HD or 4K, and in 16:9 or 21:9 aspect ratios.

There's a whopping 64GB of internal storage inside this phone, and if that's not enough the LG V10 supports up to 2TB via microSD, so you'll never run out of space when shooting photo and video. Nor battery power, for that matter, since the V10 has a 3000mAh removable power pack – you can just swap in a spare.

Raw performance should be decent, too, with a hexa-core Qualcomm Snapdragon 808 chip (as seen in the LG G4) and 4GB of DDR4 RAM. This processor supports Quick Charge, and in just 40 minutes you'll be able to get a 50 percent charge.

The LG V10 should make a great phone for multimedia with a 32-bit Hi-Fi DAC from ESS Technology. You'll experience fewer dropped calls and faster mobile data, too, as improved

signal strength comes from the V10's support for Qualcomm's TruSignal antenna boost technology.

## Specifications

- 5.7in Quad-HD IPS Quantum Display (2560x1440, 513ppi); 2.1in IPS Quantum Display (160x1040, 513ppi)
- Android 5.1.1 Lollipop
- Qualcomm Snapdragon 808
- 4GB LPDDR3 RAM
- 64GB, with microSD support up to 2TB
- 16Mp rear camera with F/1.8 aperture and OIS 2.0; 5Mp front Dual Lens
- 3000mAh battery
- LTE-A Cat 6, 802.11ac Wi-Fi, Bluetooth 4.1, NFC, USB 2.0, fingerprint scanner
- Space Black, Luxe White, Modern Beige, Ocean Blue, Opal Blue
- 6x79.3x8.6mm
- 192g


# Out now: Amazon Fire

## Why Amazon's £49 Android tablet is big news

Amazon isn't giving up the tablet fight. Its Fire Phone might have failed to persuade buyers of its charms, but the Fire tablets have seen better success. Now Amazon has launched a high quality 7in tablet that costs less than £50 – and that's not a typo.

### Price

If you're happy to have special offers (adverts for Amazon and other sponsored products) on the lock screen the Fire costs £49, including delivery from Amazon's website. To remove those ads, you can

pay an extra £10. There's also a deal where you can buy five Fire tablets and get a sixth free. That makes them £41.66 each. Few families are likely to want six tablets, we think.

## Specifications

There's plenty of good news when it comes to the tablet's features and specs. For the first time, there's a microSD slot for adding storage. This was the Achilles Heel of previous Fire tablets, especially those with 8GB of internal storage.

The new Fire has this capacity – only 5GB is available to you as usual. But you can provide your own microSD card (up to 128GB) or add a SanDisk Ultra Class 10 microSD card to your order.

32GB costs £11.99, 64GB costs £19.99 and 128GB costs £53.99.

The tablet has a 7in screen and it uses the same IPS technology as an iPad so viewing angles, colours and contrast will be good (we're currently waiting for a Fire tablet to arrive for in-depth testing).

Resolution is fairly low at 1024x600 (171ppi) but you can't complain too much at this price.

There's a quad-core 1.3GHz processor and 1GB of RAM, which should be enough for acceptable performance. Judging by Fire tablets we've tested in the past, it should be plenty enough – especially if you're buying for a child who will mainly plays games, reads books and watches video.

The built-in Wi-Fi is more basic than flagship tablets, but it's unlikely to make a noticeable difference in general use. The Fire charges via Micro-USB, but the bad news is that it takes around six hours – roughly the same time as the battery

lasts for browsing the web, reading books and watching video.

Cameras are an obvious cut corner: just VGA at the front and 2Mp at the rear. Expect poor quality photos and video all round.

At least there's built-in Bluetooth for compatible headphones, speakers and low-energy Bluetooth accessories. A mono speaker and microphone are also built in.

It measures 115x191x10.6mm and weighs 313g.

You have a choice of several different cases, including Amazon's own for £19.99 or third-party cases for a few pounds less.

## Features

Amazon's Mayday help service is no longer limited to the flagship tablets – it's on the £49.99 Fire tablet. That means you can get help any time, day or night, even on Christmas Day.

The tablet runs the latest version of Amazon Fire OS 5, which now includes the Underground app store which contains truly free apps (with no in-app purchases). There's even more of a focus on entertainment. So while you get all the benefits you'll see on previous Amazon tablets such as the ASAP predictive buffering (which means videos start playing as soon as you tap on them), a new 'On Deck' feature automatically downloads videos and the first episodes of Amazon original series – such as Extant, Transparent and Bosch – so there's always something to watch even if you're offline. Downloading only applies if you have a subscription to Amazon Prime, or Prime Instant Video, of course.

If you own a PS3 or PS4, you can 'fling' videos to your TV and use the Fire tablet as a second screen. This also works with the Fire TV or Fire TV Stick.

If you're buying the tablet for a child, the Fire for Kids app provides a filtered, safe environment where you control which apps and what content they see – and can even apply time limits for different activities such as reading and playing games.

The tablet is also available in a dedicated Kids Edition, which comes with a protective bumper case, a year's subscription to Fire for Kids unlimited and a two-year guarantee that covers accidental damage. The package costs £99.99.


# Out now: Marshall London

A look at the coolest phone we've ever seen

Marshall is a globally recognised brand, with many big-name bands using its guitar amps, plus it also has a popular range of headphones. So we were surprised when it announced it was launching a smartphone – the Marshall London.

We've not heard of any mobile networks offering the phone, so you'll have to buy it from Marshall's website. Its asking price of £399 is a lot less than flagship devices from the likes of Sony, Samsung and HTC, but it's still a lot for the specs you're getting.

## Design

Image is a big deal these days, and owning the Marshall London is partly about making a statement. You'll be shunning the conventional options and instead opting for something a little different.

The phone looks the part on almost every level and has been designed from the ground up, which is clear when you look at the details involved. The company's logo is on the front and back, there's a patterned edge, a textured rear cover and white piping, which all ensure that the London fits Marshall's distinctive style.

We were disappointed to find that the rear cover is extremely thin and plasticky, making the device feel a little cheap. Brass details make up for this, and include dual-headphone ports, an 'M' button and the impressive volume scroll wheel on the side. This also clicks if you push it in to launch the camera app, though not when the screen is off, which is a shame.

Note that the 'M' button on the top isn't the power button (that's camouflaged on the side above the scroll wheel). Instead, it's for instantly accessing your music. Press it, even with the screen off, and you're taken to the custom music player, so you can get the tunes rolling without delay.

Although the London is one of the coolest smartphones we've ever seen, things take a slightly

negative turn when it comes to the hardware on offer. With many budget and mid-range phones offering astounding specs, they make the Marshall's offering look under-equipped for the price.

The device itself is large, but has only a 4.7in screen size, so there's a large bezel. We can get over this, but the resolution is just 720p whereas we would expect Full HD for this price. It is an IPS display though, so viewing angles are good and the pixel density of 312ppi is fine.

Just one 16GB option is available, though there's a microSD slot for adding more. Powering the London is a quad-core 1.2GHz Qualcomm Snapdragon 410 processor. There's also 2GB of RAM.

Performance was very smooth – partly thanks to its almost entirely vanilla version of Android.

Having a lower resolution screen means it doesn't use as much power, and this was reflected in the device's battery life. In our benchmark test, it lasted for five hours 54 minutes, which isn't bad at all – it beat the LG G4 by more than an hour.

On the front is a 2Mp camera, and there's an 8Mp offering with a single LED flash on the rear. Unusually, the London shoots in 4:3 by default (you need to drop to 6Mp to get 16:9). The phone uses the regular Android camera app.

Overall, the main camera is average. It's slow to focus and image quality isn't anything to shout about either. You can shoot video in up to 1080p and features include HDR, Panorama and Lens Blur. It's good enough for sharing the odd snap on social media, but as with other specs, there are better options out there.

## Music

A quick look a Marshall's website highlights the company's main focus for its phone – it's all about the design and the music. And thus we come to the positive area of the hardware line-up.

As mentioned earlier, there are two headphone ports, so you no longer need to carry around that splitter or share an earbud each. This also negates the need to use on-board speakers, though if you want to the London is well-equipped with front-facing stereo speakers.

Marshall says it "might just be the loudest mobile phone on Earth," and while we're not sure that's the case, the speakers are pretty

good And no, the phone volume doesn't go to 11, it goes all the way to 36.

Back on the headphone front and the London is supplied with decent Marshall Mode earphones worth £45. Plus, there's Bluetooth with aptX if you want to use a wireless pair of headphones. There are also dual-mics, so you can record spur of the moment ideas in stereo. To complement all this is a Cirrus Logic WM8281 Audio Hub – a separate processor just for audio. Audiophiles will also be pleased to hear that the London supports FLAC.

Preinstalled is LoopStack, a 4-channel 16-bit recorder, though we were more interested in the global graphic equaliser, so you can adjust (with presets) exactly how you want things to sound, boosting bass for dance music or stripping it back a bit to hear the detail in jazz. This is found in the Marshall Home option, accessed by the 'M' button, which lets you play any music stored on the device, and also provides access to Spotify, SoundCloud and Mixcloud. The app also provides shortcut access to LoopStack, and settings such as Wi-Fi and Bluetooth.

That's a lot of audio centric features and this is really what the Marshall London is all about – it's clearly for music rather than those bothered about pixel density and processor cores.

## Software

As you would expect from a phone arriving in the second half of 2015, the London runs Android 5.0.2 Lollipop. That's not the most up-to-date version, but we're told that it will be upgraded to 6.0 Marshmallow in due course.

Although it's a stock version of the operating system, Marshall has added a few extras, including stylish wallpapers and a clock widget that displays the time in words. The Phone and Messaging apps also have custom icons. Last of all, Marshall has added a darker theme for the settings menu.

That's a nice balance of smooth performing, familiar Android, with added unique elements. As mentioned earlier there are also some apps preinstalled such as Spotify, LoopStack and SoundCloud. There's also Equalizer+ Pro and a slightly bizarre game called Rockbilly Bros where you have to manage a band. If you don't want these you can uninstall them all, with the exception of Equalizer+ Pro.

## Verdict

Focusing on core specifications, the Marshall London isn't a very good deal at all. You get the kind of hardware (in some cases worse) that's available on phones costing less than half the price. However, this isn't the point of this handset. Buying the London is all about the brand, the style and music, and on these fronts it delivers in amp-shaped bucket loads. Marshall has made the coolest phone we've ever seen (we just don't have a rating for that).

## Specifications

- 4.7in IPS (720x1280, 312ppi) screen
- Android 5.0.2 Lollipop
- Qualcomm Snapdragon 410 1.2GHz quad-core processor
- 16GB of storage
- 2GB of RAM; microSD card slot
- 8Mp rear camera with LED flash
- 2Mp front camera;
- Dual-band Wi-Fi
- Bluetooth 4.1 LE with aptX
- GPS
- Stereo speakers
- Dual-mics
- Dual-headphone ports
- M-button
- Brass scroll wheel
- Cirrus Logic WM8281 Audio Hub
- 4G LTE
- 2500mAh battery
- 70x140x9.5mm
- 145g

# Out now: Wileyfox Swift

Great first effort from new British smartphone maker

A number of new smartphone brands have popped up over the past year or so and Wileyfox is the latest. The British firm is launching two budget phones – the Storm and the Swift, which we'll be looking at here.

As with other new phone start-ups, the company has been formed by a former employee of a big brand. In this case, Wileyfox's CEO is Nick Muir, who was UK general manager for Motorola. The firm also has staff from Kazam, another British-based phone maker.


Wileyfox says that it exists "because people like you are tired of paying over the odds for mobile phones. Of being bound by contracts for phones that are past their best and of paying a premium for brands that spend a fortune on flagship stores and ubiquitous marketing campaigns."

Fitting in with this statement, the Swift is a very affordable smartphone. At £129, it easily fits into the budget category – its bigger brother, the Storm, is a more mid-range £199.

A low price is one thing, but we've seen the competition at this end of

the market get a lot tougher over the past year. Motorola continues to impress with its latest Moto G, although it's more expensive at £159. However, the Moto E 4G is just £89, while the Vodafone Smart Ultra 6 is £125 and the Smart Prime 6 is £79.

## Design

From the front, the Swift is an unassuming handset, but Wileyfox has made its mark on the back. We like the embossed fox-head logo and the subtle orange accent, particularly around the camera.

The rear cover, only available in Sandstone Black, has a similar look and feel to the OnePlus 2, although the surface is smoother and feels nicer in the hand. You can also take the back cover off to access to the dual-SIM slots, microSD card slot and 2500mAh removable battery. The back is thin and flexible, but the device feels solid enough with it clipped into place.


The Wileyfox is similar in size to the Nexus 5, so smaller than a lot of big-name devices around at the moment. It's a comfortable 135g and just over 9mm thick, but doesn't feel like it due to the curved edges of the back.

## Hardware

The Swift has a 5in screen with a 720p resolution – a common combination for a budget phone. Like the Moto G, it's fronted by Gorilla Glass 3 and uses an IPS panel. The screen is good quality, with decent contrast and colour

reproduction. It's worth noting that the Vodafone Prime Ultra 6 offers Full HD for a few pounds less, though you might not want a 5.5in display.

Inside is a Qualcomm Snapdragon 410 processor, Adreno 306 GPU and 2GB of RAM. Not a bad line-up for a phone at this price – especially when you consider the Marshall London (page 26) also has this combination and costs £399.

Apart from a sluggish start when first turning on the phone, we've found the Swift to live up to its name when it comes to performance. Scrolling around the interface is smooth, switching between apps is snappy and the camera loads quickly, too. It's not a huge surprise to find the benchmark results matching its rivals. The graphics results don't look great, but you can still play games such as Colin McRae Rally without any lag.


Where the Swift outpaces the Moto G is when it comes to storage, as Wileyfox offers 16GB as standard whereas Motorola offers 8GB for the lower price and has just 1GB of RAM. As well as dual-SIM cards slots, the Swift has a microSD card slot that's expandable up to 32GB.

As you'd expect, things are basic when it comes to connectivity, so you don't get features such as wireless charging, an IR blaster or heart-rate monitor. What the Swift does have is single-band Wi-Fi, Bluetooth 4.0 LE and A-GPS. It also has all-important support for 4G LTE networks.


HDR mode

The Swift has two cameras: 13- and 5Mp for the rear and front respectively. The camera app is easy enough to use and while the front camera takes decent selfies, the focus is not as sharp as we'd like, which is a shame.

When it comes to the main camera, 13Mp sounds like a lot – that's more than the iPhone 6s – but it doesn't automatically mean it's better. Overall, the camera is acceptable but nothing special, and the Moto G and Prime Ultra 6 both outperform it. The Swift doesn't offer the same level of detail and crispness, and the HDR mode (see the above image) takes a long time to save each shot.

## Software

The Swift runs Cyanogen 12.1, which is based on Android 5.1.1 Lollipop, so it's not a completely different experience – the biggest change is probably a vertically scrolling app menu. In fact, on the surface it looks like regular Android with

a few styling additions, such as the Wileyfox logo for the app menu.

A familiar Android layout and stock elements such as recent apps cards make the Swift easy to get to grips with. However, there's a lot on offer that you don't find on most Android phones if you look for it. For starters, you can customise the look and feel with different themes, which can be downloaded. Plus, you can choose individual components like icons, controls, fonts and even the boot animation to create the exact style you want.

You'll also notice a different drop-down notification bar in which you can rearrange the tiles and choose if you want elements, such as a weather forecast and brightness slider, on display.

The status bar that houses the clock can also be manipulated, as can the position and style of the clock, battery percentage, notification count and whether you want to be able to slide your finger across it to adjust brightness. The list of customisation options continues with a left-handed mode, control over the notification LED and even the pixel density of the screen.

When it comes to security, you can set the operating system to scramble the device's PIN display, so that it changes every time. Other privacy settings include a blocked caller list, which will come in handy for most people, while the Privacy Guard lets you control permissions for every app on the phone. That means you can make sure Facebook can't access your location, for example.

Last but not least is the Audio FX app, which provides various EQ settings such as folk and dance, plus an individual bass control.

## Verdict

For a brand-new smartphone maker's first effort, we're impressed with the Wileyfox Swift. It's a stylish little handset that in essence offers the same specs as the Moto G for less money. We love the customisation available in Cyanogen OS, but elements such as the cameras aren't as good as its rivals. Vodafone's Smart Ultra 6 remains a better option for slightly less money – unless a 5.5in screen is too big in which case look at the Smart Prime 6 as an alternative.

## Specifications

- Cyanogen OS (based on Android 5.1 Lollipop)
- Qualcomm Snapdragon 410 (MSM8916) processor with 1.2GHz quad-core CPU
- Adreno 306 with 400MHz GPU
- 2GB RAM
- 16GB internal storage
- MicroSD up to 32GB
- 5in, 720p HD (1280x720, 294ppi), Corning Gorilla Glass 3
- 13Mp rear camera, LED flash, Auto-focus
- 5Mp front camera
- Micro-SIM
- Micro-USB
- 3.5mm headset jack
- Bluetooth version 4.0 LE
- Wi-Fi 802.11b/g/n (2.4GHz)
- A-GPS
- 4G LTE
- 2470mAh removable battery
- 71x141x9.4mm
- 135g


# Out now: Vector Watch Luna

Great-looking watch with month-long battery life

A lot of new tech brands are popping up and London-based Vector Watch is one of them, aiming to take on the likes of Android Wear smartwatches and the Apple Watch.

A key element to any smartwatch is the design – it's sitting on your wrist on constant display and is arguably more of a statement than your phone, which spends much of its time hidden away in a pocket or bag.

There are a number of designs, such as the Contemporary model (see above), which comes with a stainless steel or matt black case, and either leather or metal straps. Meanwhile the Classic models are champagne or rose gold with a padded leather strap. The lone performance model has a 'luxury' silicone strap, but isn't any cheaper.

Our review watch was well-built. It's thick – 12mm – and it has a reassuring weight to it. The Luna is fully waterproof, so much so that you can take it to depths of 50m.

## Hardware and features

It's not as much of a boast with the recent addition of iOS support for Android Wear, but the Vector Watch works with iPhone, Android and Windows Phone. It's great to see a firm develop for all three major mobile OSes for a change – note that we've been testing paired with Android so our comments are based on this experience alone.

Setting up the device takes no time at all – simply download the app, create a basic account, switch on Bluetooth and connect the watch. Although the watch disconnected from our Nexus 5 a few times, it was generally stable.

If you're looking for gizmos and gadgets, then the Luna is not the right choice for you. Vector Watch has sacrificed extras for good old-fashioned battery life. It touts a whopping 30-day battery life and the firm isn't lying on this front. Not having to regularly charge it is a real boon but there's no way of checking the level, which is an oversight.

In order to achieve this, the Luna has a basic monochrome LCD screen, a bit like the Pebble

Steel. This is fine, if you like a retro look, but for you money you'd be forgiven for expecting something similar to the Apple Watch or high-end Android Wear watch. The Vector Watch screen won't fool anyone into thinking the hands are real.

Navigation is easy with three buttons on the side that scroll through various watch faces, which can be customised with what Vector calls 'streams'. For example, some faces have areas where you can place information such as the date, weather, and events. Alongside preloaded watch faces, you can download more from a store, though there are only a handful to choose from and none from any third-party developers. You can also download apps, but aside from preinstalled ones like a stopwatch there are just four to choose from: The Economist, Cnet, BBC and ESPN. They don't do a whole lot either, with the BBC app giving you three headlines to scroll through.

As alluded to, the watch can count your activity by monitoring steps, calories, distance and sleep. You access them through a particular watch face (and the app).

When linked up to a phone, you can get a range of notifications and the Luna will vibrate, plus show a ring round the edge. Twist it toward you or press the middle button and it will start up. On the most part this works well, however the notification will disappear if you don't open it.

A handy feature for people with busy schedules is a quick way to see when you're busy each day. Long-press the middle button on any watch face and the Vector Watch will show any meetings around the edge.

## Verdict

It's good to see a company approaching the smartwatch differently and we like the design and style of the Luna. A month-long battery life is a real standout point but you'll have to be happy with the retro low-res display as a sacrifice. This is all acceptable but the device falls down when it comes to functionality with poor apps, fitness tracking and notification system.

## Specifications

- Compatible with iOS, Android and Windows Phone
- Stainless steel case
- Leather strap, 22mm
- LCD screen
- 50m waterproof
- 30-day battery life

# How to:
# Your questions answered

A list of your most common smartphone questions

## Why is my phone hot?

In the days of increasingly slim phones and metal- rather than plastic cases, a phone that gets warm in use is not at all uncommon. All consumer tech can get hot in use, although there are three key things that will make your phone get hot: when it is being taxed with intensive tasks, while it is charging, and often when you have a poor signal.

While some heat is normal, excessive heat isn't good for your smartphone's battery. You could try

removing the case (or removing it from your pocket) to allow it to cool down a little, reduce the number of things you're trying to do on it at once, and unplug it once it's finished charging. If it's really hot, you could also turn it off for a short while to give it a rest.

Working out exactly where on the phone the heat is coming from can also help you work out how to tackle the problem – it could be the screen, the battery or the processor, for example. If you've recently installed a software update, this could also be causing problems.

## Why is my phone so slow?

If your phone was once fast and is now slow, but otherwise seems to be functioning properly, the most common cause is a build-up of apps, data, temporary files and other junk. It's also possible a particular app or software update is causing problems, although less likely. Even less likely is that malware is slowing down your Android phone.

Go through your phone and remove anything you don't need. Apps you don't use can be uninstalled (including those that may have been preinstalled when you bought the phone – if you are able to do so); photos, video and other media can be backed up and removed; your Downloads folder can be emptied; and you can also clear your data cache. For the latter, head to Settings, Storage, tap on Cached data and then select Delete. You can also delete cached data for individual apps from Settings, Apps.

Doing all this should speed up your phone, but it can take time. An easier option can be a factory resest, which will return your phone to its out-of-box condition, but beware that you will lose anything

that is not backed up. We're not just talking about photos and video here, since you will also lose your downloaded apps and any in-game progress not linked to the Play store. Rest assured that you will be able to re-download any apps previously bought from Google Play without paying again.

If you're sure you want to perform a factory reset, go to Settings, Backup and reset, Factory data reset. This process will remove everything from your device except Android itself.

Files stored on a removable memory card will not be touched by a factory reset, but if your phone is still slow it could be the microSD card causing problems. First try removing it from the phone and see if performance is affected. If the microSD card seems to be causing problems, attach your phone to a PC and back up the memory card's contents by copying everything over to the PC. Go to Settings,

Storage and opt to format the card, then plug it back into the PC and copy back only the files you really need. If you later find some apps don't work properly it's likely because some of their files were installed on the memory card; just uninstall and reinstall them to get them working.

Other things you can do to speed up your Android phone are to disable animations and extras, close multiple running apps, and if you have several try removing some widgets from your home screen. Sometimes the simplest fix is to restart your phone (some people can go months without doing so).

## Why is my phone full?

Phone storage is quickly filled with apps, data, photos, video, music and more. If your phone has only 4-, 8- or even 16GB of internal storage, it's very likely that you will run out of space, at which point you may receive an 'insufficient storage available'

error message when trying to download a new app. Even if you don't think that you have too much stuff installed on your phone, remember that the Android OS alone consumes a couple of gigs.

You can try the tips outlined above in 'Why is my phone so slow?' to claw back some storage space, or you can use some additional methods to gain more space.

The easiest way to add storage is with a microSD card, if your phone supports one. Note, though, that not all apps can be saved to microSD. Other solutions include cloud storage, hooking up USB OTG storage and connecting to a wireless hard drive.

## Why is my phone in Safe mode?

Safe mode is a useful feature when you're troubleshooting a problematic Android phone, but it's also easy to accidentally put your phone into Safe mode and then get stuck there.

It's easy to accidentally enter Safe mode (you'll know you're in Safe mode because it will be written at the bottom corner of the screen). On my Samsung Galaxy S6, for example, if I turn on the phone while holding down the volume-down button (easily done if it's in your hand) then it will automatically enter Safe mode. On other phones, you might enter Safe mode by pressing and holding the power off option in the power button menu for a few seconds, then simply accepting the prompt that pops up without paying attention to what it is asking you.

Getting out of Safe mode is usually as simple as restarting the phone. If you find the phone is still restarting in Safe mode it's likely your volume button is sticking or there is another hardware issue at fault.

## Why is my phone in Recovery mode?

Recovery mode is not the same thing as Safe mode, outlined above, but it is also used for Android troubleshooting and, well, recovery. Recovery mode is more reminiscent of a PC's BIOS, and can be used to bypass the normal loading procedure in order to factory reset the phone, install updates from an SD card or a custom ROM, for example.

As with Safe mode, if you find yourself in Recovery mode without intending to access it then it's probable you did so accidentally, usually by holding down the power and volume-down buttons while the phone is booting.

Within Recovery mode you can use the volume-up- and -down buttons to cycle through menus, and the power button to select options. Be very careful what you press here – if all you want to do is exit Recovery mode look for 'Reboot system now'.

## Why is my phone saying no SIM?

If your phone is reporting that no SIM is installed then the most likely explanation is that your SIM is either not installed or incorrectly inserted. Try taking the SIM out the phone, ensuring that it's clean (and that the space inside the phone is also clean), and reinserting it correctly. If it sits in a SIM tray, ensure the tray is the correct way up and fully pushed in. (Incidentally, if you're having trouble removing your SIM tray, push harder on the release pin.) Also try restarting your phone and checking that all software updates have been applied.

If it is a brand-new SIM then it's possible it hasn't been activated. Contact your mobile operator for help. If you're absolutely certain that your SIM is

activated and correctly inserted and the phone is still reporting no SIM or SIM missing then it's most likely a problem with either the hardware or the SIM itself (if it's damaged then request a replacement from your mobile operator), or your service has been cancelled (again, contact your mobile operator). The best way to check for sure whether it is your phone or the SIM at fault is to borrow a friend's SIM and check whether it is recognised by the device.

If you have no service you either have no reception (in which case it will allow you to make emergency calls only) or there is an issue with your SIM card.

If you have no reception on your phone also check you haven't got it in Flight mode – look for an aeroplane icon in the notification bar.

## Why is my phone eating so much data?

This may not be the answer you want, but if your mobile phone bill is high then it's because you've

been overspending, possibly without realising. With most mobile contracts now offering free minutes and texts, it's usually data that is to blame. However, it's worth checking your phone bill to see how many minutes and texts you use on an average month and upgrading your package if necessary.

Data is what's usually behind huge phone bills. Even when you think you're not using it certain apps will be running services in the background, periodically checking for new emails or weather updates and the like. One fix for this is to connect to a Wi-Fi network whenever possible and keep tabs on your mobile data usage. You can set an alert for when you're nearing your data allowance, then opt to turn off mobile data until the month is over.

As with minutes and texts, check your bill to see how much data you're using. If necessary, upgrade your contract or add a data bolt-on. An extra fiver a

month might not sound good now, but it will prove a lot cheaper when your operator begins charging you £6.50 for every 250MB you go over your limit.

Services such as WhatsApp use a tiny amount of data, but streaming video and downloading large apps can quickly eat through your allowance. We can't tell you exactly how much data you need without knowing your personal circumstances, but personally I have never been able to stick to anything under 2GB. Now I have a 4G contract it's easy to eat through data much quicker than I realise, and I have therefore upgraded to a 6GB contract. That seems to be sufficient for me personally.

Roaming is another cause for huge phone bills. When you go abroad you are charged more for the calls, minutes and data you use, even if they are free on your contract back home. A solution to this is to turn off data roaming (Settings, Mobile Networks, Data Roaming), but if you still want to be able to use your phone abroad, you need to work out how to do so as cheaply as possible before you leave home.

All mobile operators have plans that let you use your UK minutes, texts and data abroad for a fixed price per day. Three has also introduced its Feel At Home programme, whereby it doesn't charge you for roaming in several European countries.

If you haven't been using your phone abroad, and are certain you aren't overspending on data, text or minutes, check an itemised bill to see exactly what you're being charged for. If you're having problems managing your phone bill, speak to your mobile operator who will be able to advise you on what to do next and also, if necessary, set an expenditure limit on your account.

## Why is my phone roaming?

If your phone is 'roaming' then it means you are accessing a different network to your home network. Be aware that when using your phone abroad you will be charged extra for the minutes, texts and data you use unless you are subscribed to a special roaming package (see above). You can turn off data roaming in Settings, Mobile Networks, Data Roaming.

Note that even when you turn off data roaming you will still be charged for any calls and texts you make, but not those that you receive.

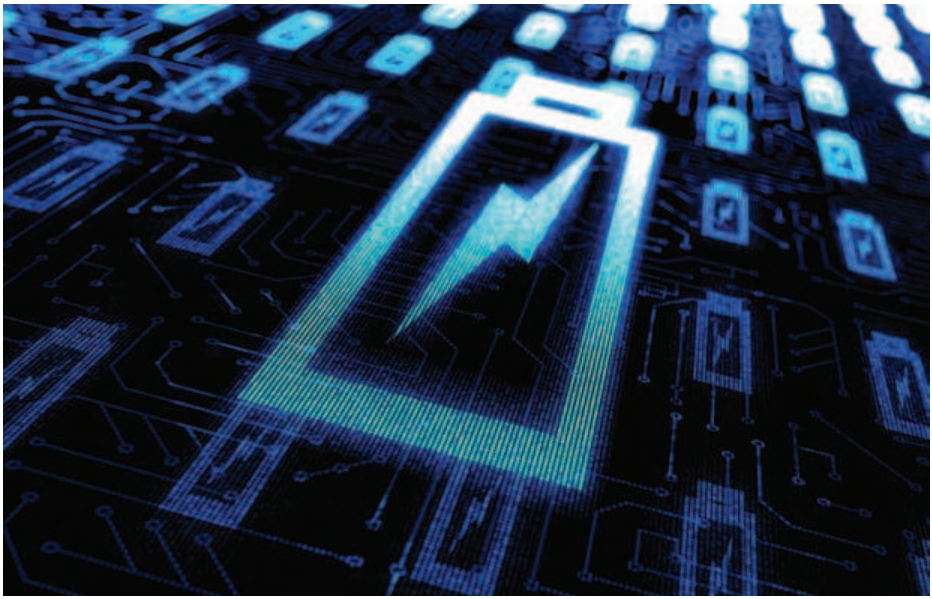
## Why is my phone battery so bad?

All batteries degrade over time, but even new phones can struggle to make it through a full working day thanks to increased usage, larger, higher-resolution screens, more powerful hardware and so forth. Rather than going out of your way to change the way you use your smartphone to improve battery life, our favourite 'fix' is to carry a portable power bank, so you'll never run out of juice.

The truth is it is incredibly difficult to 'fix' poor battery life, because it's very rarely one definable thing that is causing the problem.

If your phone's battery is removable, a 'fix' may be to buy and fit a replacement battery. Most flagship phones these days do not allow the user to access the battery, however, and if it's a software issue then fitting a new battery won't help.

Software updates that haven't been optimised for your phone's older hardware are a common problem, but other than waiting for the manufacturer to roll out a new update there's little you can do.



There are plenty of tips you can try that may or may not improve your situation. Restart your phone every once in a while. Take steps to avoid your phone becoming too hot (see above) or too cold. Turn down screen brightness and adjust the screen timeout setting. Turn off Bluetooth and Wi-Fi when you're not using them. Close multiple apps running in the background. Turn off haptic (vibration) feedback. Turn off live wallpaper and animations. Reduce the phone's volume when playing media. Take advantage of power saving modes. Unplug your phone once it's finished charging.

## Why is my phone charging slowly?

When you need to charge your phone quickly before you leave home, the last thing you need is to find your phone is charging slowly.

In order to 'fix' this issue we need to look at the hardware you're using to charge your phone. If a phone has for no apparent reason suddenly started to charge slowly then it could be an issue with the USB cable, the charger, or even the phone's battery or charging connection itself.

First, the USB cable. It's often recommended that you use the USB cable supplied with the phone for charging. You absolutely don't need to do that, but it's a way of avoiding you using some cheap, inferior cable in its place. You should also check your cable for damage, and that the connector itself still fits snugly in the phone. If in doubt, get a new cable. Also check that the connection on your phone is free from dust and grime.

Secondly, the charger. These days it's becoming increasingly rare that a mains adaptor is supplied with your smartphone. This makes sense, given that

you don't need multiple identical chargers for every piece of consumer tech you own. However, it also means you could be using an old USB adaptor that is underpowered for your device.

Worse still is when USB chargers are supplied with your phone, but they don't offer the fastest way to charge that phone. (We'd rather not have one supplied.)

When we talk about charging phones we tend to talk about standard-, fast- and quick chargers. Standard phone chargers are typically rated at 5W, but most modern smartphones will accept a higher wattage, such as that offered by the chargers typically sold with tablets. What we call 'fast' chargers may offer between 10- and 12.5W, which means you could potentially charge your phone in half the time.

Quick Charging is a Qualcomm technology supported by many flagship phones running certain Snapdragon processors. Quick Charge 1.0 can reduce charging time by up to 40 percent over standard chargers, Quick Charge 2.0 by up to 75 percent, and the newly announced Quick Charge 3.0 by up to 80 percent. In order to benefit you must use a compatible charger, however. If you're not sure how much power your phone will accept, don't worry. It will draw only the power it requires.

Wireless chargers (typically 5W) and a PC or laptop's USB ports (2.5W USB 1.0 and USB 2.0, 4.5W USB 3.0) will charge a phone much slower than can a USB mains adaptor, so if you're in a rush don't use one of these.

Other tips thrown around for improving phone charging are to remove the case (thereby avoiding

heat build-up), and to turn it off or put it into Flight mode. Try not to use it while it's charging either.

As in our previous answer, our preferred solution is not to worry about how long your phone takes to charge before you leave home, but to carry a power bank so you can recharge it wherever you are.

## Why is my phone data so slow?

First, it's important to note the differences between mobile connectivity standards, as we've explained in our guide to mobile connectivity.

4G is the fastest mobile data connection, with Wi-Fi like speeds for accessing the mobile web. Indeed, it's the next best thing to connecting to Wi-Fi for getting online from your phone. However, not all of the UK is covered by 4G networks, and not all phone contracts include it – check with your mobile operator whether you would be able to benefit from 4G.

3G is also usefully fast for browsing the internet from a smartphone, but anything other than this (such as GPRS and Edge) are too slow to even think about using to get online.

If you are connected to either 4G, 3G or Wi-Fi on your phone and your internet is slow, it may be a problem with your connection or signal strength.

If your internet is slow you should ensure you don't have other internet tasks running in the background slowing down your connection, such as app downloads (you can set these to download over Wi-Fi only within Google Play).

Sometimes we find closing and restarting the browser can make a huge difference if it gets stuck trying to load a page.

You can also increase the amount of memory available to Google Chrome. In your smartphone browser head to chrome://flags/#max-tiles-for-interest-area and change the drop-down from default (128MB) to 512MB. Tap Relaunch Chrome to save the changes.

Occasionally it can be congestion or a problem with the mobile network causing internet problems, too. A good idea is to check Twitter to see whether others are experiencing the same problems.

If your internet is not working at all, check that you don't have the phone in Flight mode (look for an aeroplane icon in the notification bar).

## Why is my phone speaker so quiet?

Pressing the physical volume buttons on an Android phone let you alter the volume for calls and notifications, alarms, media and system sounds; these controls are also available within the Settings menu.

If you find your phone too quiet when you're talking on the phone then it's actually the in-call volume you need to increase. This is easily achievable using the volume keys, but only while a phone call is active. Once you reach the maximum in-call volume you will hear a beep.

If your phone's speaker is too quiet when playing music without earphones, check that it isn't being muffled - if the speaker is at the rear you may need to remove your phone case, hold it differently so audio isn't directed into your palm, or place it face down. You should also check you have the media volume turned up, accessible from the Settings menu or by pressing the physical volume buttons while music is playing, a video is streaming or a game is being played.

## Why is my phone not ringing?

If you can't hear your phone ringing, it may be that you have inadvertently put it on Silent mode. Check this in Settings, Sounds and notifications, Sound mode. Also within the Sounds and Notifications menu check the Volume setting, since it may be set so low that you can't hear it.

If phone calls are not getting through to your phone then you either have it in Flight mode or you have no reception. Or you've been cut off – have you paid your bill?

This may also be the issue if your phone is not sending or receiving texts, or it may be that your message server settings are incorrect. Check your mobile operators support pages or ask them for help in how to correctly configure your message server settings.

## Why is my phone rooted?

A rooted phone really isn't as scary as it sounds, and it can be treated exactly like an unrooted phone if you have no desire to take advantage of its root control.

Rooting an Android device is the process of gaining privileged or full control of the operating system. It's a bit like having a VIP pass at a gig, which allows you to go anywhere you like and do anything you want (within reason). Rooting an Android smartphone or tablet is effectively the same as 'jailbreaking' an iPhone.

Whereas most smartphones sold in the UK are sold unrooted, elsewhere in the world – particularly China in our experience – they are more frequently sold rooted. Learn more about rooting Android in our next feature

# How to:
# Get more from Android

## Root an Android device to open up new features

Android phones are, on the whole, hugely powerful devices. Whether it's the Sony Z5, Samsung Galaxy S6 or LG G4, these phones have the capability to be customised and tailored to their owner's will. What they often lack is the opportunity. Bloatware, heavy UI skins, and other limitations can stop you from using them to their true potential. There is a solution though, and here we'll explain how to root your Android phone or tablet.

Rooting will give you back control over the look, feel, and behaviour of your device.

You don't have to be a geek, a hacker or a tech expert: this guide is for beginners, and it's not (that) difficult. You just need to be aware of the potential risks and consequences. We'll get to those shortly, but there's nothing to worry about. We'll show how to keep safe, make good use of the new freedom, and even put things back as they were in the first place. Just in case.

## What is rooting?

Rooting an Android device is the process of gaining privileged or full control of the operating system, and even the software that runs the OS. The idea is to get root access, hence why it is known as 'rooting'. It's a bit like having a VIP pass at a gig, you can go anywhere you like and do anything you want (within reason). Rooting an Android smartphone or tablet is in effect the same as 'jailbreaking' an iPhone.

## Why root a smartphone or tablet?

Android is a mature platform now, and the arguments for rooting that made sense a couple of years ago hold a little less water these days. Google has worked hard to refine the user experience, and the current iteration – 5.1.1 Lollipop – is a clutter-free work of art that feels a long way from the dark days of Froyo and Gingerbread.(We've largely blanked those from our collective memory.)

The problems occur when phone manufacturers lay their own interfaces on top of it. Far from improving Android, they often make things slower, uglier and more confusing. Then there's the

mortal sin of preloaded apps, often duplicating the functionality of stock Google versions, and being impossible to remove.

Not only does this take valuable storage space away from the user, but it seems to suggest that this expensive device you've paid for doesn't belong to you. If you want that kind of experience, then a trip to the Apple Store is a good idea, and at least you'll be able to sell the device for a decent amount of money when you decide to upgrade.

The good news is it doesn't have to be this way. If you want to control every aspect of your device, choosing the access apps have to the web and the very interface itself, then rooting remains a solid option. The process is free, shouldn't take too long, and in many cases is reversible.

Of course, if you don't want cumbersome preloaded software suites, then there is the more capitalistic approach of not buying a phone from a manufacturer that employs such tactics. Instead, you can pick up one of the Nexus range from Google, or a Moto G, Moto X Play, or Moto X Style from Motorola, all of which arrive with a minimum of bloat.

But if you already have a different Android phone, or have your eye on one in particular, and just don't aren't keen on the software, then rooting could let you build the device of your dreams.

## What are the risks?

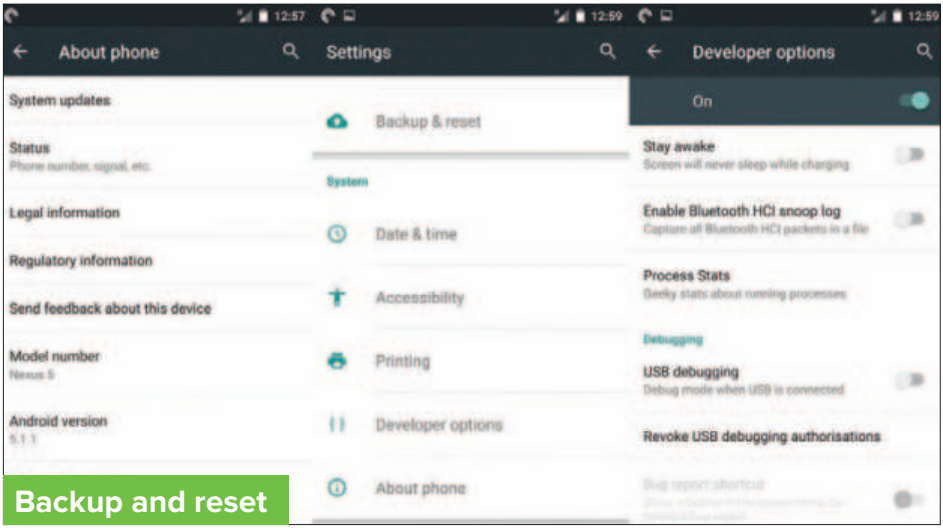
Rooting isn't a five-minute job. The decision needs a bit of thought. First, rooting your phone will absolutely void your warranty. Manufacturers don't want you to do it, Google doesn't want you to do it, and you won't get any customer support if you

run into problems... and you are likely to run into problems. The worst case scenario is you will brick your phone.

This doesn't mean you grow so frustrated that you'll throw it against the wall – it simply describes the technological abilities your phone will possess if rooting goes wrong. Which is nothing at all. Hence, a brick.

Security becomes a more serious concern. Many of the reports you read about malicious attacks on Android users will most likely involve rooted devices, or certainly those running software not found on the Google Play Store. So it's more risky than a standard setup.

But, and this is very important, if you do your research, are not afraid to learn how things work, and don't mind spending time fixing software problems, rooting can be hugely liberating and give you a device that is truly your own. Just remember,




**Backup and reset**

backup anything important before you begin, preferably to a PC or cloud service.

## Who should root?

Considering the risks involved with rooting our advice is that you should only do it on your device if you can survive if something goes wrong. If you already have doubts, then it's probably best to leave things well alone. We said this was a beginner's guide – which it is – but that doesn't mean rooting is suitable for everyone.

If you're keen to learn about rooting, use – or buy – an old, cheap phone to practice on before moving up to your main device.

## How do I do it?

The first thing to know is that there isn't a 'root my phone' button on your device. It's also not entirely clear whether your particular handset can be rooted easily. So before you begin thinking about custom ROMs or root-enabled apps, you'll need to research your Android phone or tablet.

A good search term is '[model name] how to root'. More often than not you'll probably find a link to a website called XDA Developers (xda-developers.com), which is undoubtedly the best resource for this sort of thing. Here you may discover that there are many variants of your handset, each with different identifying numbers and codes. European models tend to vary from their North American cousins, as do the ones from other parts of the world.

To find your exact unit, go to Settings on your phone and navigate through General > About Phone, then check the Model number. On some

Android variants you might find this in the Hardware Information option on the About Phone menu.

You'll also want to know which flavour of Android you're running, so visit Settings > General > About Phone, and check the Android version. Again some phone will have this under Software Information.

Another thing you'll need to do before you can root your phone, no matter which method you use, is to turn on Developer mode. To do this, go to Settings > General > About Phone, then tap on the Build number several times until you see a message saying that you are now a developer. Then when you return to Settings > General you'll see that Developer Options has appeared on your menu. Tap this and ensure that USB debugging is turned on.

Armed with your handset model information, you should be able to track down the method


OneClickRoot

that exists to root your phone. While we were writing this guide we used an LG G3 that we had in the office, and found a couple of different tools that were recommended. The most appealing was OneClickRoot (oneclickroot.com), which is a website that promises a simple process for rooting a number of Android phones. You visit the site, find your phone, download the free software, then connect your phone to your PC and run the root process. There are a number of other downloadable Root tools to choose from, such as SuperOneClick, Unlock Root, and Universal AndRoot, but you'll need to check if your device is supported.

The potential hazards of trying to root a phone showed up straightaway for us, as the OneClickRoot method didn't work. Our phone appeared on the list, it matched the model number, but when we tried to root a message appeared saying our device wasn't eligible yet, but would hopefully be added in the future. There was a chat option, but we decided to carry on our search. We tried another piece of software that was recommended on several sites, but this time the program wouldn't actually run on our PC, even after several attempts and multiple copies being downloaded.

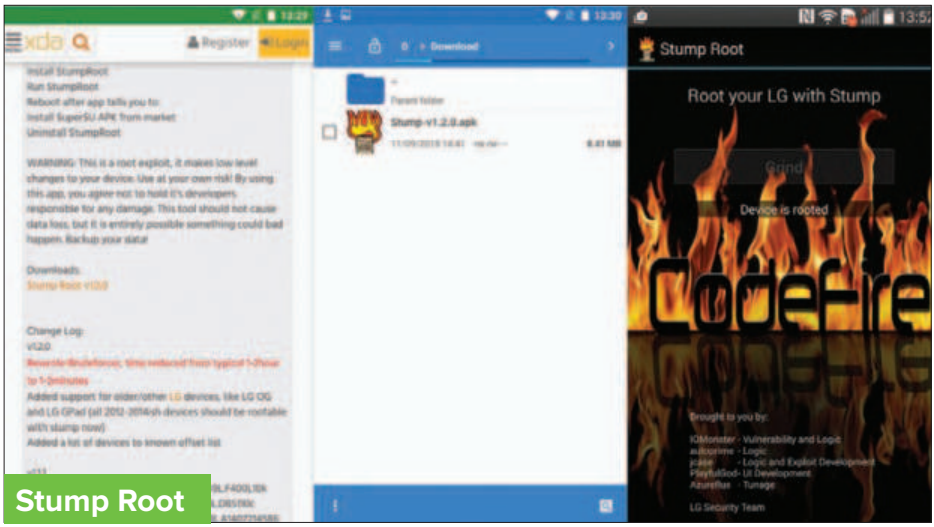
We mention this because the path to rootedness can be filled with this sort of frustration. It's very much a community effort, run by enthusiasts, and therefore you can expect to spend lots of time on forums if things don't turn out as you'd hoped. Of course, you might try any of the above and find it works first time, which would have been our experience if we'd started with Stump Root.

## Stump Root

This clever piece of software allows you to root your phone without the need of a computer. First, you need to go to stumproot.org where you tap on the option to Download Stump Root V1.2.0. Once this is done, open the app drawer on your phone, find the File Manager and navigate to your downloads folder. You'll see the Stump-v1.2.0 apk, which you tap to install. Google presents a scary 'don't use this app as it bypasses security' message, but this is normal for rooting a device. Install the app, then on the main screen hit tap the Grind button and Stump Root will automatically root your phone. Now all that needs to be done is to reboot and you're good to go.

## Is my phone rooted?

When you first turn on a rooted phone there isn't much to differentiate it from an unrooted one. A quick way to make sure is to download the free




Stump Root

Root Checker app from the Google Play Store. Just tap the Check button in the top right hand corner of the installed app, and it will do a short scan of your system and confirm whether you have Root Access or not. Many Chinese phones come pre-rooted, for example.

## The benefits

One of the first apps to download from the Google Play Store is SuperSU, which allows you to control the permissions that root apps have, alongside a variety of other settings. Depending on how you rooted your device, SuperSU might already have been installed, or you might find an alternative called KingRoot on your system which does many of the same things.

There are some very useful apps that require root access, and now you can use any of these on your phone. If you really want to gain complete governance over your system then Device Control is an excellent app that has options for a whole manner of deep settings such as speed limits on your CPU, internal temperature controls, and the Tasker which allows you to create rules for how your phone behaves in different circumstances. This last one is incredibly useful, but can be intimidating to make sense of at first. We recommend searching for a few tutorials online, and before you know it you'll be whizzing around the interface. Device Control requires another app, Busybox, to work properly, but you'll be taken to the right place to install it when needed.

Backing up your phone is another very handy feature, and this can be achieved by downloading

Titanium Backup app from the Google Play Store. Once installed you can use Titanium to make backups of your user data, applications, or both. To do your first full backup tap on the Backup/Restore tab at the top of the app, then tap Menu > Batch action > Backup all user apps + system data, then tap the green tick.

If you want to fine-tune your system and customise its behaviour even further, but don't fancy heading down the more nuclear Custom ROM route, then the Xposed Framework offers many of the advantages of custom ROMs, but without the hassle. It's not a standard app you'll find in the Google Play Store, so you'll need to search for it online – just go to the XDA Developers site – then install it, and download some of the many tweak packs that actually do the adjusting. Popular options include Tweakbox, and the MoDaCo Toolkit.


**Titanium backup**

## Install custom ROMs

One of the main reasons many people root their phones is to install custom ROMs. These are replacements for the operating system on the devices, and are often updated versions of Android that the manufacturers haven't made available. The most famous ROMs are Cyanogenmod (cyanogenmod.org) and Paranoid Android (paranoidandroid.co), both of which offer excellent alternatives to the bloat heavy offerings of many mainstream Android flavours. Installing a custom ROM is another risky venture, which should again only be undertaken with the knowledge that problems could occur. Non-optimised ROMs could cause hardware issues, drain the battery quicker, and mean some apps don't work properly anymore. Then, of course, there's that old 'brick' issue.

Usually before you install a custom ROM you'll need to create a Custom Recovery. This will allow the device to make a backup of your system, install ROMs, and provide a way to get going again if things go wrong. The most common types are Standard Recovery (this is a part of every Android phone), ClockworkMod (CWM) and Team Win Recovery Project (TWRP).

Apps such as TWRP Manager, ROM Installer and ROM Manager have the ability to create these Custom Recovery features, and they also provide a way of downloading ROMs and installing them on your device. As flashing a custom ROM can be a tricky business, you will certainly need to visit sites such as XDA Developers or the excellent Cyanogenmod, where you can search for the detailed steps that you will need to follow

in order to flash the Custom ROM. It's extremely important that you follow the steps to the letter, and read them several times before you begin. Otherwise you can quickly end up with an expensive paperweight on your desk.

We used TWRP Manager to install a dedicated ROM on our LG G3 that we downloaded from the CyanogenMod site.

The sequence for installing custom ROMs is in essence this:

- Root your phone
- Find the version of the ROM for your specific device and download it to your smartphone
- Download TWRP Manager or another ROM manager app
- Use the ROM manager to create a Custom Recovery
- Backup your existing ROM and data
- Use the ROM manager to boot into recovery mode
- Wipe the existing ROM
- Flash the new ROM
- Reboot your device

Creating a backup of your existing ROM means that if you don't like the new one you install, or you want to put your phone back to its original state, you can use a ROM manager to restore the backup.

One thing to consider is that CyanogenMod and other ROMs don't come with the Google Play Store as standard, and you'll need to visit the CyanogenMod or relevant ROM builder's site to find instructions for installing the service. It isn't difficult, certainly not now that you've gotten this far, but it

still involves downloading software and using the Recovery mode to install it on your system.

## Return to factory settings

If you've finished experimenting with ROMs and Root access, then there is a simple way to take your phone back to the way it was when you began. Open up the SuperSU app, go to Settings and then select the Full Unroot option. Hopefully now your device will return to its unrooted status.

If this doesn't work, then you can still unroot your phone, but it will involve researching your particular handset and maybe asking a few questions on the XDA Developers forums (tinyurl.com/o87jgka). They're a friendly bunch though, so it's not a bad way to spend some time.


# Out now:
# 45 best Android games

The best Android games for your phone or tablet

### Star Wars: Uprising

**Free**

With Star Wars all the rage the Galaxy needs a new hero in the fight against the Empire. Take part in Sector Battles, create your own character, and play real-time co-op.

## Despicable Me

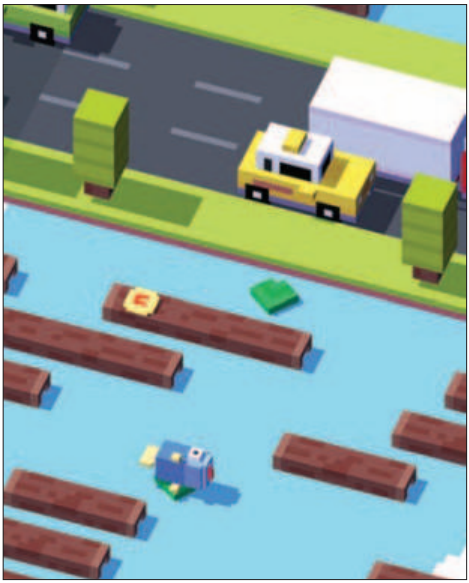
**Free**

If you love those little yellow things you'll love Minion Rush. Jump, roll, dodge and scramble to collect bananas in this cute runner game.

## Crossy Road

**Free**

Why did the chicken cross the road? Never mind that, why didn't you? We love this hopper game, and so will you.



## Fallout Shelter

**Free**

Fallout fans will love Shelter, a mobile game that gives you complete control over your very own Vault, and the citizens that reside in it. Can you keep your Dwellers happy, fed and protected from the dangers of the outside world in this post-apocalyptic adventure?

## WordBrain

**Free**


"Even the smartest word game enthusiasts will have a real challenge to complete this game. In fact: only very few have!" That's all the encouragement we need: the challenge is on to become a word master in this headscratchingly difficult hidden-word game.

## Minecraft Pocket Edition

**£4.99**

Construction sim with endless possibilities. This infinite box of Legos has the very real potential to eat your life before your eyes.

## Alphabear

**Free**

Oh now this is super-cute. You spell out words and bears appear. Longer words equal bigger bears and even more cuteness.

## Spider-Man Unlimited

**Free**

Recruit an army of heroes in the Spider-Verse and take on the Sinister Six. This action-packed arcade game will keep you entertained for hours.

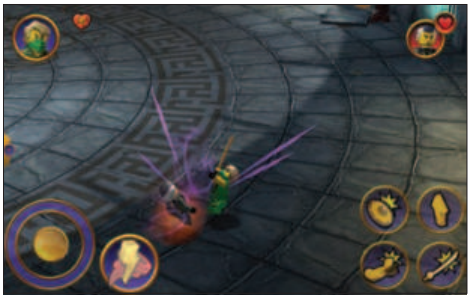

## Clash of Clans

**Free**

Form the ultimate Clan with your own army of Barbarians, Archers, Hog Riders, Wizards and more, then defend your village and take down the Goblin King.

## Lego Ninjago Tournament

**Free**



Ninjas, it's time to enter Master Chen's Tournament of Elements. You must use your training to take on Elemental Masters, and the more you win the stronger you become.

## Monopoly

**£1.49**


Who doesn't love Monopoly? If you answered "me", go directly to jail. YOU WILL NOT COLLECT £200.

## Table Tennis Touch

**79p**

It's not a freebie, but stunning graphics make Table Tennis Touch worth the download. Even more so if you like Ping Pong.

## Sim City Build It

**Free**

A realistic city-builder that lets you create an environment in which your citizens will thrive, and trade resources with friends online. Just when you think life is going good, real-life challenges will keep you on your toes.

## Plants vs Zombies 2

**Free**

Plants vs Zombies is the tower-defence game loved by all, and the sequel is much more of the same zombie- and super-plant goodness.


## First Touch Soccer 2015

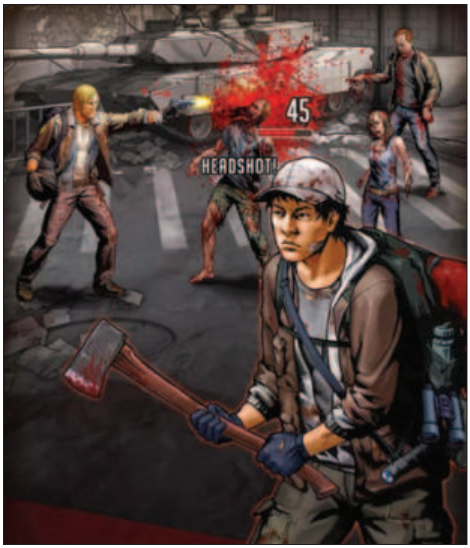
**Free**

There are loads of football games for Android, but if you don't want to pay a penny First Touch Soccer is a great choice.

## Walking Dead: Road to Survival

**Free**

TellTale's Walking Dead series is not to be missed, but this alternative is a turn-based RPG that focuses on the original comic books over the TV series, and in which your decisions will determine who lives and who dies. Kicking off at Woodbury, can you take on The Governor?




## The Room Two

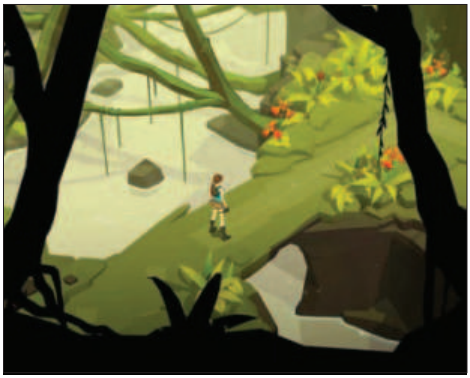
**£1.99**

Physical puzzles in a beautifully-realised 3D world make this somewhat unsettling sequel a joy to play.

## Lara Croft Go

**£3.99**

Explore the ruins of an ancient civilisation and face deadly challenges in this turn-based adventure game. More than 75 puzzles are split into five chapters.



## Bad Piggies

**Free**

From the makers of Angry Birds, Bad Piggies is an addictive and challenging puzzle game, with some action thrown in to add to the fun.


## Temple Run 2

**Free**

A hugely popular runner game for Android, Temple Run 2 sees you navigate perilous terrain as you attempt to escape with the cursed idol. However far you can get, it won't be far enough.

## Monument Valley

**£2.99**

Supremely calming puzzler with innovative perspective-based gameplay. More soothing than an opiate-spiked Horlicks.

## Jetpack Joyride

**Free**


Mission-driven progression and a range of crazy gadgets, jetpacks, vehicles, achievements and character customisation add replay value to the simple controls and repetitive nature of Barry Steakfries' endless journey in Jetpack Joyride.

## Angry Birds

**Free**

Just because it's old doesn't make it bad: this list would never be complete without this mobile gaming classic.


## Ridiculous Fishing

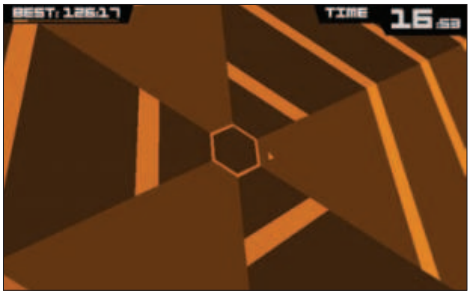
**£1.99**

"A handcrafted game about fishing with guns, chainsaws & toasters." SOLD.

## Super Hexagon

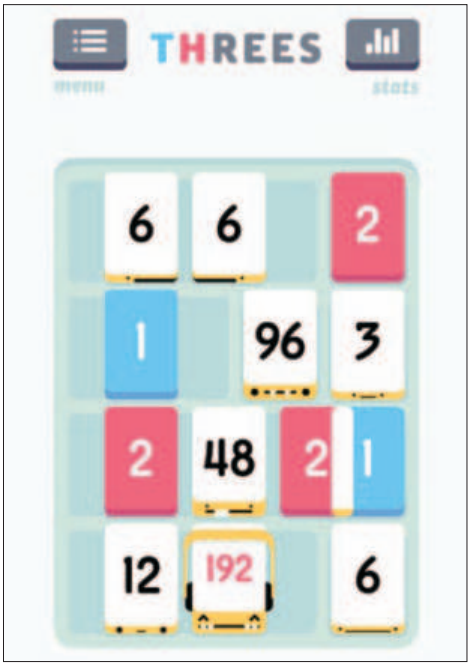
**£1.99**

Frantic shape-based avoidance game. Punishing difficulty set to a rather wonderful electronic score.




## Threes!

**Free**

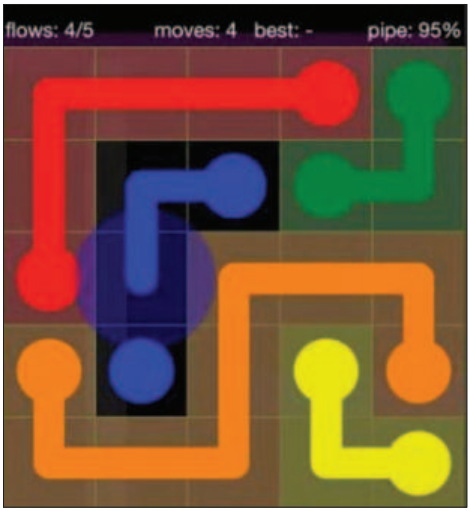



Potently addictive, simple yet full of strategic depth, Threes is based on a set of numbered tiles that you manipulate around a four-by-four board. There are blue ones, and pinky twos, and you jam these into each other to make white threes. Everything else is a multiple of three created by joining two matching white tiles. Two plus one equals three. Three plus three equals six. Six plus six equals 12. You get the picture.

## Flow Free

**Free**

Addictive colour-matching fun that is equal parts frustration and satisfaction. Attempt to reach the goal in as few moves as possible.




## Sonic Dash

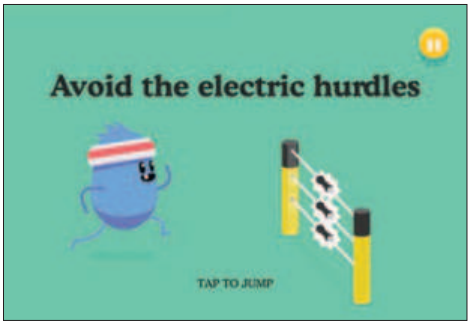
**Free**

The lovable blue spikey-haired hedgehog returns in this endless runner game for Android. Dash, jump and spin through levels collecting rings, dodging spikes and ultimately climbing the leaderboards.

## Dumb Ways To Die 2

**Free**

Warioware-style mini games abound in this free gigglefest. Fun, quickfire action, with entertaining deaths aplenty.




## Words With Friends

**Free**

Words With Friends is in essence Scrabble, played with friends at your own pace. And you get to show them how much more intelligent you are than them. A no-brainer.

## Call Of Duty: Heroes

**Free**


This 3D combat strategy game has you customise your base and train elite forces to wipe out enemies in fierce battle. Plus: create deadly alliances with your friends, competing for in-game rewards.

## Riptide GP2

**£1.59**

Rocket-powered hydro jets and futuristic race tracks make Riptide GP2 a fast, fun, and visually stunning racing experience.

## Cut The Rope: Time Travel

**Free**

Cut the Rope: Time Travel is a new adventure filled with time-travelling, candy-crunching, physics-based action. Help Om Nom feed his ancestors as you play through the Middle Ages, the

Renaissance, a Pirate Ship, Ancient Egypt, Ancient Greece, the Stone Age, Disco Era, Wild West, Asian Dynasty, Industrial Revolution and the Future. Great for kids, too.

## Beach Buggy Blitz

**Free**


A fun driving game in which you collect power-ups and performance-boosting upgrades, unlock new vehicles and collect new characters. Awesome fun and great graphics make Beach Buggy Blitz an easy download.

## Machinarium

**£3.99**

Josef the robot is on a mission to save girlfriend Berta from the Blackcap Brotherhood in this award-winning adventure game.

## Hitman GO

**£3.99**


Agent 47's latest outing is a quasi-board game that plays like the lead-up to a game of Cluedo. Initially odd, but ultimately rewarding.

## Marvel Contest of Champions

**Free**

If you love your superheroes and fighting games then you'll love Contest of Champions. Level up characters and build your own team of champions in this graphically stunning fighter game.

## Thomas Was Alone

**£3.99**

Satisfying special gameplay takes second place to the compelling writing and characterization. You'll never care more about a bunch of squares.

## Badland

**Free**

Gorgeous side-scrolling, jump-based platformer, and winner of three awards. Worth downloading for the stunning visuals alone.

## Grand Theft Auto San Andreas

**£3.99**

Rockstar has retooled its genre-defining franchise for Android, and you can pick up GTA III, Vice City and San Andreas for criminally good gaming wherever you go.


## Criminal Case

**Free**

Are you ready to test your detective skills? This is a hidden-object game with an actual storyline: investigate crime scenes for clues and help the Police of Grimsborough crack murder cases.

## Modern Combat 5 Blackout

**Free**

Gameloft's answer to Call of Duty on the PC or consoles, Modern Combat 5: Blackout is a meaty game which includes both single- and multiplayer modes.

## Goat Simulator

**£3.99**

What started out as an Internet joke has now landed on Android. Play as a goat and wreck as much stuff as possible in this fantastic mess of a game.

## Crazy Taxi City Rush

**Free**

Crazy Taxi City Rush rewards you for insane driving as you race around doing whatever it takes to get your passengers to their destination on time.


## You Must Build A Boat

**£1.99**

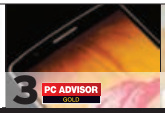
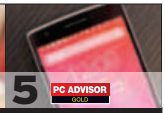
Sequel to 10000000, this builds on the original tile-matching puzzle meets running game with a boat. You have to build it, assemble a crew, and explore whatever dungeons you pass as you float down river.

| Best smartphones | 1 PC ADVISOR RECOMMENDED | 2 PC ADVISOR GOLD | 3 PC ADVISOR RECOMMENDED | 4 PC ADVISOR GOLD | 5 PC ADVISOR RECOMMENDED |
|---|---|---|---|---|---|
| | Samsung Galaxy S6 | Sony Xperia Z3 Compact | LG G4 | LG G3 | HTC One M9 |
| Price | £349 inc VAT | £349 inc VAT | £500 inc VAT | £479 inc VAT | £579 inc VAT |
| Website | Samsung.com/uk | Sony.co.uk | Lg.com/uk | Lg.com/uk | HTC.com/uk |
| Build rating | ★★★★½ | ★★★★½ | ★★★★☆ | ★★★★½ | ★★★★½ |
| Features rating | ★★★★½ | ★★★★☆ | ★★★★☆ | ★★★★½ | ★★★★☆ |
| Performance rating | ★★★★½ | ★★★★½ | ★★★★☆ | ★★★★½ | ★★★★☆ |
| Value rating | ★★★★☆ | ★★★★★ | ★★★★½ | ★★★★½ | ★★★½☆ |
| Overall rating | ★★★★½ | ★★★★½ | ★★★★☆ | ★★★★½ | ★★★★☆ |
| OS (out of box) | Android 5.0 Lollipop | Android 4.4 KitKat | Android 5.1 Lollipop | Android 4.4 KitKat | Android 5.0 Lollipop |
| Processor | 2.1GHz Exynos 7420 | 2.5GHz Snapdragon 801 | Snapdragon 808 six-core | 2.5GHz Snapdragon 801 | Snapdragon 810 octa-core |
| RAM | 3GB | 2GB | 3GB | 2GB/3GB | 3GB |
| Storage | 32/64GB | 16GB | 32GB | 16GB/32GB | 32GB |
| MicroSD support | No | Up to 128GB | Up to 128GB | No | Up to 128GB |
| Graphics | Mali-T760 GPU | Adreno 330 | Adreno 418 | Adreno 330 | Adreno 430 |
| Screen size | 5.1in | 4.6in | 4.5in | 5.5in | 5in |
| Screen resolution | 1440x2560 | 720x1280 | 1440x2560 | 1440x2560 | 1080x1920 |
| Pixel density | 577ppi | 319ppi | 538ppi | 534ppi | 441ppi |
| Screen technology | Super AMOLED | IPS | IPS | IPS | IPS |
| Front camera | 5Mp | 2.2Mp | 8Mp | 2Mp | 4Mp (UltraPixel) |
| Rear camera | 16Mp, LED flash | 20.7Mp, LED flash | 16Mp | 13Mp, LED flash | 20Mp |
| Video recording | 4K | 4K | 4K | 4K | 4K |
| Cellular connectivity | 4G | 4G | 4G | 4G | 4G |
| SIM type | Nano-SIM | Nano-SIM | Micro-SIM | Micro-SIM | Nano-SIM |
| Dual-SIM as standard | No | No | No | No | No |
| Wi-Fi | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band |
| Bluetooth | Bluetooth 4.1 | Bluetooth 4.0 | Bluetooth 4.1 | Bluetooth 4.0 (aptX) | Bluetooth 4.1 (aptX) |
| GPS | GPS, Glonass | A-GPS, Glonass | A-GPS, Glonass | A-GPS, Glonass | GPS, Glonass |
| NFC | Yes | Yes | Yes | Yes | Yes |
| USB OTG | Yes | Yes | Yes | Yes | Yes |
| Extra features | Heart-rate sensor, fingerprint scanner | Waterproof, PS4 Remote Play | 24-bit/192kHz audio, rear key | 24-bit/192kHz audio, rear key | BoomSound speakers |
| Geekbench 3.0 (single) | 1347 | Not tested | Not tested | Not tested | 1160 |
| Geekbench 3.0 (multi) | 4438 | 2800 | 3513 | 2465 | 3378 |
| SunSpider | 1048ms | 944ms | 715ms | 959ms | 867ms |
| GFXBench: T-Rex | 30fps | 41fps | 25fps | 20fps | 50fps |
| GFXBench: Manhattan | 14fps | 26fps | 9fps | Not tested | 24fps |
| Battery | 2550mAh, non-removable | 2600mAh, non-removable | 3000mAh removable | 3000mAh, removable, Qi | 2840mAh, non-removable |
| Dimensions | 143.4x70.5x6.8mm | 64.9x127x8.6mm | 64.9x127x8.6mm | 75x146x8.9mm | 70x145x9.7mm |
| Weight | 138g | 129g | 155g | 149g | 157g |
| Warranty | 1 year | 2 years | 1 year | 1 year | 1 year |
| FULL REVIEW | TINYURL.COM/PC2KOYQ | TINYURL.COM/NBBUY82 | TINYURL.COM/NBBUY82 | TINYURL.COM/OA76T73 | TINYURL.COM/PUS2XEJ |

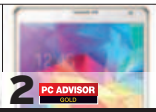
## Best budget smartphones

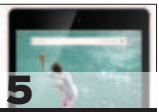
| | 1 PC ADVISOR RECOMMENDED | 2 PC ADVISOR RECOMMENDED | 3 | 4 | 5 PC ADVISOR RECOMMENDED |
|---|---|---|---|---|---|
| | **Vodafone Smart Ultra 6** | **Motorola Moto E 4G 2015** | **Vodafone Smart Prime 6** | **EE Harrier Mini** | **Motorola Moto G 3G 2014** |
| **Price** | **£125 inc VAT** | **£109 inc VAT** | **£79 inc VAT** | **£99 inc VAT** | **£140 inc VAT** |
| **Website** | Vodafone.co.uk | Motorola.co.uk | Vodafone.co.uk | EE.co.uk | Motorola.co.uk |
| **Build rating** | ★★★★½ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★★☆ |
| **Features rating** | ★★★★½ | ★★★★☆ | ★★★★☆ | ★★★½☆ | ★★★★☆ |
| **Performance rating** | ★★★★½ | ★★★★☆ | ★★★★★ | ★★★½☆ | ★★★★☆ |
| **Value rating** | ★★★★★ | ★★★★★ | ★★★★☆ | ★★★★½ | ★★★★☆ |
| **Overall rating** | ★★★★½ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★★☆ |
| **OS (out of box)** | Android 5.0.2 Lollipop | Android 5.0 Lollipop | Android 5.0.2 Lollipop | Android 5.0 Lollipop | Android 4.4 KitKat |
| **Processor** | 2.5GHz Snapdragon 615 | 1.2GHz Snapdragon 410 | 1.2GHz Snapdragon 410 | 1.2GHz | 1.2GHz Snapdragon 400 |
| **RAM** | 2GB | 1GB | 1GB | 1GB | 1GB |
| **Storage** | 16GB | 8GB | 8GB | 8GB | 8GB |
| **MicroSD support** | Up to 128GB | Up to 32GB | Up to 64GB | Not stated | Up to 32GB |
| **Graphics** | Adreno 405 | Adreno 306 | Adreno 306 | Not stated | Adreno 305 |
| **Screen size** | 5.5in | 4.5in | 5in | 4.7in | 5in |
| **Screen resolution** | 1920x1080 | 540x960 | 720x1280 | 720x1280 | 720x1280 |
| **Pixel density** | 401ppi | 245ppi | 294ppi | 312ppi | 294ppi |
| **Screen technology** | IPS | IPS | IPS | IPS | IPS |
| **Front camera** | 5Mp | 0.3Mp | 2Mp | 2Mp | 2Mp |
| **Rear camera** | 13Mp | 5Mp | 8Mp | 8Mp, LED flash | 8Mp, LED flash |
| **Video recording** | 1080p | 720p | 1080p | 720p | 720p |
| **Cellular connectivity** | 4G | 4G | 4G | 4G | 3G |
| **SIM type** | Nano-SIM | Micro-SIM | Micro-SIM | Micro-SIM | Micro-SIM |
| **Dual-SIM as standard** | No | No | No | No | Yes |
| **Wi-Fi** | 802.11b/g/n | 802.11b/g/n | 802.11b/g/n | 802.11b/g/n | 802.11b/g/n |
| **Bluetooth** | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 |
| **GPS** | GPS, A-GPS | GPS, A-GPS, Glonass | A-GPS | A-GPS, Glonass | A-GPS, Glonass |
| **NFC** | Yes | No | No | No | No |
| **USB OTG** | No | No | Yes | Yes | Yes |
| **Extra features** | FM radio | Double-twist launches camera, lockscreen alerts | FM radio | Wi-Fi calling | Stereo speakers |
| **Geekbench 3.0 (single)** | 649 | 464 | 464 | Not tested | 340 |
| **Geekbench 3.0 (multi)** | 2469 | 1463 | 1401 | 1549 | 1144 |
| **SunSpider** | 1545ms | 1301ms | 1301ms | 1880ms | 1526ms |
| **GFXBench: T-Rex** | 14fps | 13fps | 9.4fps | 10fps | 11fps |
| **GFXBench: Manhattan** | 5.7fps | 6fps | 3.8fps | 4fps | 4fps |
| **Battery** | 3000mAh, non-removable | 2390mAh, non-removable | N/S, non-removable | 2000mAh, non-removable | 2390mAh, non-removable |
| **Dimensions** | 154x77x9mm | 66.8x5.2-12.3x129.9mm | 141.65x71.89x9mm | 138x67.9x9.5mm | 71x142x11mm |
| **Weight** | 159g | 145g | 155g | 124g | 155g |
| **Warranty** | 1 year | 1 year | 1 year | 1 year | 1 year |
| **FULL REVIEW** | TINYURL.COM/Q7Q9NXR | TINYURL.COM/Q7Q9NXR | TINYURL.COM/Q5DSNHE | TINYURL.COM/PXTROH4 | TINYURL.COM/OAE6AH5 |

## Best phablets

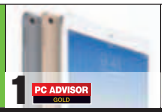
| | 1 PC ADVISOR RECOMMENDED | 2 | 3 PC ADVISOR GOLD | 4 | 5 PC ADVISOR GOLD |
|---|---|---|---|---|---|
| |  Samsung Galaxy Note 4 |  LG G4 |  LG G3 |  OnePlus 2 |  OnePlus One |
| Price | **£599 inc VAT** | **£500 inc VAT** | **£479 inc VAT** | **£239 inc VAT** | **£229 inc VAT** |
| Website | Samsung.com/uk | Lg.com/uk | Lg.com/uk | Oneplus.net | Oneplus.net |
| Build rating | ★★★★☆ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★★☆ |
| Features rating | ★★★★½ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★½☆ |
| Performance rating | ★★★★☆ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★★☆ |
| Value rating | ★★★★☆ | ★★★★½ | ★★★★½ | ★★★★★ | ★★★★★ |
| Overall rating | ★★★★☆ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★★½ |
| OS (out of box) | Android 4.4 KitKat | Android 5.1 Lollipop | Android 4.4 KitKat | OxygenOS 2.0 (Android 5.1) | Cyanogen 11S (Android 4.4) |
| Processor | 2.7GHz Snapdragon 805 | 1.82GHz Snapdragon 808 | 2.5GHz Snapdragon 801 | 1.8GHz Snapdragon 801 | 2.5GHz Snapdragon 801 |
| RAM | 3GB | 3GB | 2GB/3GB | 3/4GB | 3GB |
| Storage | 32GB | 32GB | 16GB/32GB | 16GB/64GB | 16GB/64GB |
| MicroSD support | Up to 128GB | Up to 128GB | No | No | No |
| Graphics | Adreno 420 | Adreno 418 | Adreno 330 | Adreno 430 | Adreno 330 |
| Screen size | 5.7in | 5.5in | 5.5in | 5.5in | 5.5in |
| Screen resolution | 1440x2560 | 1440x2560 | 1440x2560 | 1920x1080 | 1920x1080 |
| Pixel density | 515ppi | 538ppi | 534ppi | 401ppi | 401ppi |
| Screen technology | Super AMOLED | IPS | IPS | IPS | IPS |
| Front camera | 3.7Mp | 8Mp | 2Mp | 5Mp | 5Mp |
| Rear camera | 16Mp, LED flash | 16Mp, LED flash | 13Mp, LED flash | 13Mp, Dual-LED flash | 13Mp, LED flash |
| Video recording | 4K | 4K | 4K | 4K | 4K |
| Cellular connectivity | 4G | 4G | 4G | 4G | 4G |
| SIM type | Micro-SIM | Micro-SIM | Micro-SIM | Dual-SIM | Micro-SIM |
| Dual-SIM as standard | No | No | No | Yes | No |
| Wi-Fi | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11ac, dual-band | 802.11b/g/n/ac, dual-band |
| Bluetooth | Bluetooth 4.1 | Bluetooth 4.0 | Bluetooth 4.0 (aptX) | Bluetooth 4.0 | Bluetooth 4.0 |
| GPS | GPS, Glonass | A-GPS, Glonass | A-GPS, Glonass | GPS, Glonass | GPS, Glonass |
| NFC | Yes | Yes | Yes | No | Yes |
| USB OTG | Yes | Yes | Yes | Yes | Yes |
| Extra features | Fingerprint, UV, heart-rate sensors, S Pen stylus | 24bit/192kHz audio, rear key, IR blaster | 24bit/192kHz audio, rear key | None | None |
| Geekbench 3.0 (single) | Not tested | Not tested | Not tested | Not tested | 969 |
| Geekbench 3.0 (multi) | 3272 | 3513 | 2465 | 4094 | 2570 |
| SunSpider | 1367ms | 715ms | 959ms | 1471ms | 877ms |
| GFXBench: T-Rex | 27fps | 25fps | 20fps | 46fps | 29fps |
| GFXBench: Manhattan | 11fps | 9fps | Not tested | 16fps | Not tested |
| Battery | 3220mAh, removable | 3000mAh, removable, Qi | 3000mAh, removable, Qi | 3300mAh, non-removable | 3100mAh, non-removable |
| Dimensions | 78.6x153.5x8.5mm | 76x149x6.3-9.8mm | 75x146x8.9mm | 151.8x74.9x9.9mm | 75.9x152.9x8.9mm |
| Weight | 176g | 155g | 149g | 175g | 162g |
| Warranty | 2 years | 1 year | 1 year | 1 year | 1 year |
| FULL REVIEW | TINYURL.COM/PNHJCZ4 | TINYURL.COM/QDGU48T | TINYURL.COM/OA76T73 | TINYURL.COM/NSGEV3U | TINYURL.COM/PK3S5CP |

## Best 7- & 8in tablets

| | 1 PC ADVISOR GOLD | 2 PC ADVISOR GOLD | 3 PC ADVISOR RECOMMENDED | 4 PC ADVISOR RECOMMENDED | 5 |
|---|---|---|---|---|---|
| | **Google Nexus 7** | **Samsung Galaxy Tab S 8.4** | **Sony Xperia Z3 Tablet Compact** | **Apple iPad mini 2** | **Google Nexus 9** |
| **Price** | **£199 inc VAT** | **£319 inc VAT** | **£299 inc VAT** | **£239 inc VAT** | **£319 inc VAT** |
| **Website** | Play.google.com | Samsung.com/uk | Sony.co.uk | Apple.com/uk | Play.google.com |
| **Build rating** | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★★½ | ★★★½☆ |
| **Features rating** | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★☆ | ★★★★☆ |
| **Performance rating** | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ |
| **Value rating** | ★★★★½ | ★★★★½ | ★★★★☆ | ★★★★☆ | ★★★★☆ |
| **Overall rating** | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★☆ |
| **OS (out of box)** | Android 4.3 Jelly Bean | Android 4.4 KitKat | Android 4.4 KitKat | iOS 8.2 | Android 5.0 Lollipop |
| **Processor** | 1.5GHz Snapdragon S4 Pro | Exynos 5420, octa-core | 2.5GHz Snapdragon 801 | Apple A7, Apple M7 | 2.3GHz nVidia Tegra K1 |
| **RAM** | 2GB | 3GB | 3GB | 1GB | 2GB |
| **Storage** | 16GB/32GB | 16GB/32GB | 16GB/32GB | 16GB/32GB | 16GB/32GB |
| **MicroSD support** | No | Up to 128GB | Up to 128GB | No | No |
| **Graphics** | Adreno 320 | ARM Mali-T628 MP6 | Adreno 330 | Apple A7 | 192-core Kepler |
| **Screen size** | 7in | 8.4in | 8in | 7.9in | 8.9in |
| **Screen resolution** | 1920x1200 | 2560x1440 | 1920x1200 | 2048x1536 | 2048x1536 |
| **Pixel density** | 323ppi | 359ppi | 283ppi | 326ppi | 287ppi |
| **Screen technology** | IPS | Super AMOLED | IPS | IPS | IPS |
| **Front camera** | 1.2Mp | 2.1Mp | 2.2Mp | 1.2Mp | 1.6Mp |
| **Rear camera** | 5Mp | 8Mp, LED flash | 8.1Mp | 5Mp | 8Mp, LED flash |
| **Video recording** | 1080p | 1080p | 1080p | 1080p | 1080p |
| **Cellular connectivity** | 4G version available | 4G version available | 4G version available | 4G version available | 4G version available |
| **Wi-Fi** | 802.11b/g/n, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n, dual-band | 802.11a/b/g/n/ac, dual-band |
| **Bluetooth** | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.1 |
| **GPS** | GPS, Glonass | GPS, Glonass | A-GPS, Glonass | A-GPS, Glonass | GPS, Glonass |
| **NFC** | Yes | No | Yes | No | Yes |
| **USB OTG** | Yes | Yes | Yes | No | Yes |
| **Fingerprint scanner** | No | Yes | No | No | No |
| **Waterproof** | No | No | Yes | No | No |
| **Extra features** | None | Stereo speakers | PS4 Remote Play, stereo speakers | None | BoomSound speakers |
| **Geekbench 3.0 (single)** | Not tested | Not tested | Not tested | Not tested | 1904 |
| **Geekbench 3.0 (multi)** | Not tested | 2765 | 2708 | Not tested | 3352 |
| **SunSpider** | 1136ms | 1089ms | 1017ms | 397ms | 955ms |
| **GFXBench: T-Rex** | Not tested | 14fps | 28fps | Not tested | 48fps |
| **GFXBench: Manhattan** | Not tested | 3fps | 11fps | Not tested | 22fps |
| **Battery** | 3950mAh, non-removable, Qi | 4900mAh, non-removable | 4500mAh, non-removable | 6470mAh, non-removable | 6700mAh, non-removable |
| **Dimensions** | 200x114x8.65mm | 126x213x6.6mm | 213x124x6.4mm | 134.7x7.5x200mm | 153.7x228.3x8mm |
| **Weight** | 299g | 294g | 270g | 331g | 425g |
| **Warranty** | 1 year | 1 year | 1 year | 1 year | 1 year |
| **FULL REVIEW** | TINYURL.COM/PUJDJBY | TINYURL.COM/OUEM64Z | TINYURL.COM/NJ6VHEO | TINYURL.COM/PCJPB5L | TINYURL.COM/NQ6K77Y |

| Best 9- & 10in tablets |  1 PC ADVISOR GOLD |  2 PC ADVISOR RECOMMENDED |  3 PC ADVISOR RECOMMENDED |  4 PC ADVISOR RECOMMENDED |  5 PC ADVISOR RECOMMENDED |
|---|---|---|---|---|---|
| | **Apple iPad Air 2** | **Samsung Galaxy Tab S 10.5** | **Sony Xperia Z2 Tablet** | **Apple iPad Air** | **Google Nexus 10** |
| **Price** | **£399 inc VAT** | **£399 inc VAT** | **£369 inc VAT** | **£319 inc VAT** | **£389 inc VAT** |
| **Website** | Apple.com/uk | Samsung.com/uk | Sony.co.uk | Apple.com/uk | Play.google.com |
| **Build rating** | ★★★★★ | ★★★★☆ | ★★★★½ | ★★★★☆ | ★★★★½ |
| **Features rating** | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ |
| **Performance rating** | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ |
| **Value rating** | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★★½ |
| **Overall rating** | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★☆ | ★★★★½ |
| **OS (out of box)** | iOS 8.2 | Android 4.4 KitKat | Android 4.4 KitKat | iOS 8.2 | Android 4.2 Jelly Bean |
| **Processor** | Apple A8X, Apple M8 | Exynos 5420, octa-core | 2.3GHz Snapdragon 801 | Apple A7, Apple M7 | 1.7GHz Exynos 5250 |
| **RAM** | 2GB | 3GB | 3GB | 1GB | 2GB |
| **Storage** | 16GB/64GB/128GB | 16GB/32GB | 16GB | 16GB/32GB | 16GB/32GB |
| **MicroSD support** | No | Up to 128GB | Up to 64GB | No | No |
| **Graphics** | Apple A8X | ARM Mali-T628 MP6 | Adreno 330 | Apple A7 | ARM Mali T604 |
| **Screen size** | 9.7in | 10.5in | 10.1in | 9.7in | 10.1in |
| **Screen resolution** | 2048x1536 | 2560x1600 | 1920x1200 | 2048x1536 | 2560x1600 |
| **Pixel density** | 264ppi | 288ppi | 224ppi | 264ppi | 300ppi |
| **Screen technology** | IPS | Super AMOLED | IPS | IPS | IPS |
| **Front camera** | 1.2Mp | 2.1Mp | 2.2Mp | 1.2Mp | 1.9Mp |
| **Rear camera** | 8Mp | 8Mp, LED flash | 8.1Mp | 5Mp | 5Mp, LED flash |
| **Video recording** | 1080p | 1080p | 1080p | 1080p | 1080p |
| **Cellular connectivity** | 4G version available | 4G version available | 4G version available | 4G version available | No |
| **Wi-Fi** | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n/ac, dual-band | 802.11a/b/g/n, dual-band | 802.11b/g/n, dual-band |
| **Bluetooth** | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 | Bluetooth 4.0 |
| **GPS** | A-GPS, Glonass | GPS, Glonass | GPS, Glonass | A-GPS, Glonass | GPS, Glonass |
| **NFC** | Yes (for Apple Pay) | No | Yes | No | Yes |
| **USB OTG** | No | Yes | Yes | No | Yes |
| **Fingerprint scanner** | Yes | Yes | No | No | No |
| **Waterproof** | No | No | Yes | No | No |
| **Extra features** | None | Stereo speakers | PlayStation certified | None | None |
| **Geekbench 3.0 (single)** | 1816 | Not tested | 967 | 1487 | Not tested |
| **Geekbench 3.0 (multi)** | 4523 | 2769 | 2719 | 2703 | Not tested |
| **SunSpider** | Not tested | 1079ms | 1099ms | 400ms | 1329ms |
| **GFXBench: T-Rex** | 48fps | 14fps | 27fps | 23fps | Not tested |
| **GFXBench: Manhattan** | Not tested | 3fps | Not tested | Not tested | Not tested |
| **Battery** | 7340mAh, non-removable | 7900mAh, non-removable | 6000mAh, non-removable | 8600mAh, non-removable | 9000mAh, non-removable |
| **Dimensions** | 240x169.5x6.1mm | 247x177x6.6mm | 266x172x6.4mm | 240x169x7.5mm | 264x178x8.9mm |
| **Weight** | 437g | 465g | 439g | 469g | 603g |
| **Warranty** | 1 year | 1 year | 1 year | 1 year | 1 year |
| **FULL REVIEW** | TINYURL.COM/PLQXWSZ | TINYURL.COM/OESDFZO | TINYURL.COM/M8BZZUN | TINYURL.COM/NVOOF6H | TINYURL.COM/PUAG9RN |

## Best smartwatches

| | 1 PC ADVISOR RECOMMENDED | 2 PC ADVISOR RECOMMENDED | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | **LG G Watch R** | **Motorola Moto 360** | **Sony Smartwatch 3** | **LG Watch Urbane** | **Asus ZenWatch** |
| **Price** | **£195 inc VAT** | **£199 inc VAT** | **£189 inc VAT** | **£259 inc VAT** | **£199 inc VAT** |
| **Website** | Lg.com/uk | Motorola.co.uk | Sony.co.uk | Lg.com/uk | Uk.asus.com |
| **Overall rating** | ★★★★½ | ★★★★½ | ★★★½☆ | ★★★★☆ | ★★★½☆ |
| **Operating system** | Android Wear | Android Wear | Android Wear | Android Wear | Android Wear |
| **Compatibility** | Android | Android | Android | Android | Android |
| **Display** | 1.3in 320x320 P-OLED | 1.56in 290x320 LCD | 1.6in 320x320 LCD | 1.3in 320x320 P-OLED | 1.6in 320x320 AMOLED |
| **Processor** | 1.2GHz Snapdrgon 400 | TI OMAP 3 | 1.2GHz ARM V7 | 1.2GHz Snapdragon 400 | 1.2GHz Snapdragon 400 |
| **RAM** | 512MB | 512MB | 512MB | 512MB | 512MB |
| **Storage** | 4GB | 4GB | 4GB | 4GB | 4GB |
| **Waterproof** | Yes | Yes | Yes | Yes | Yes |
| **Battery** | 410mAh | 320mAh | 420mAh | 410mAh | 1.4Wh |
| **Dimensions** | 46.4x53.6x9.7mm | 46x11.5mm | 36x51x10mm | 46x52x10.9mm | 51x39.9x7.9-9.4mm |
| **Weight** | 62g | 49g (leather band model) | 45g | 67g | 75g |
| **Warranty** | 1 year | 1 year | 1 year | 1 year | 1 year |
| **FULL REVIEW** | TINYURL.COM/QATY8FT | TINYURL.COM/O9C69K6 | TINYURL.COM/OQVZ3PN | TINYURL.COM/Q3VK7ES | TINYURL.COM/NN7GA7W |

## Best smartwatches

| | 6 | 7 PC ADVISOR RECOMMENDED | 8 PC ADVISOR RECOMMENDED | 9 PC ADVISOR RECOMMENDED | 10 |
|---|---|---|---|---|---|
| | **Apple Watch** | **Pebble Steel** | **LG G Watch** | **Sony Smartwatch 2** | **Samsung Gear 2 Neo** |
| **Price** | **£299 inc VAT** | **£179 inc VAT** | **£159 inc VAT** | **£125 inc VAT** | **£169 inc VAT** |
| **Website** | Apple.com/uk | Getpebble.com | Lg.com/uk | Sony.co.uk | Samsung.com/uk |
| **Overall rating** | ★★★☆☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ |
| **Operating system** | watchOS | Proprietary | Android Wear | Proprietary | Tizen |
| **Compatibility** | iOS | iOS, Android | Android | Android | Samsung phones |
| **Display** | 1.32in 340x312 Ion-X Glass | 1.26in 144x168 E-Paper | 1.65in 280x280 IPS | 1.6in 220x176 LCD | 1.6in 320x320 Super AMOLED |
| **Processor** | Apple S1 | Not specified | 1.2GHz Snapdragon 400 | Not specified | Dual-core |
| **RAM** | 512MB | 512MB | 512MB | Not specified | 512MB |
| **Storage** | 8GB | Not specified | 4GB | Not specified | 4GB |
| **Waterproof** | Yes | Yes | Yes | Yes | Yes |
| **Battery** | Not specified | 130mAh | 400mAh | Not specified | 300mAh |
| **Dimensions** | 38.6x33.3x10.5mm | 46x34x10.5mm | 37.9x46.5x9.95mm | 42x41x9mm | 58.8x37.9x10mm |
| **Weight** | 72g | 156g | 63g | 123g | 55g |
| **Warranty** | 1 year | 1 year | 1 year | 1 year | 1 year |
| **FULL REVIEW** | TINYURL.COM/OUTH9XK | TINYURL.COM/PPBXV7J | TINYURL.COM/Q84WL6L | TINYURL.COM/P4X7AZM | TINYURL.COM/Q68FS5U |

| Best activity trackers | 1 PC ADVISOR RECOMMENDED | 2 | 3 | 4 PC ADVISOR RECOMMENDED | 5 PC ADVISOR RECOMMENDED |
|---|---|---|---|---|---|
| | Fitbit Charge HR | Fitbit Surge | Fitbit One | Microsoft Band | Fitbit Charge |
| Price | £119 inc VAT | £199 inc VAT | £79 inc VAT | £169 inc VAT | £99 inc VAT |
| Website | Fitbit.com/uk | Fitbit.com/uk | Fitbit.com/uk | Microsoft.com/en-gb | Fitbit.com/uk |
| Overall rating | ★★★★½ | ★★★★½ | ★★★★½ | ★★★½☆ | ★★★★☆ |
| Compatibility | iOS, Android, Windows | iOS, Android, Windows | iOS, Android | iOS, Android, Windows | iOS, Android, Windows |
| Display | OLED | Touchscreen | OLED | TFT | OLED |
| Pedometer | Yes | Yes | Yes | Yes | Yes |
| Heart-rate monitor | Yes | Yes | No | Yes | No |
| Sleep tracking | Yes | Yes | Yes | Yes | Yes |
| Alarm | Yes | Yes | Yes | Yes | Yes |
| Third-party app synching | Yes | Yes | Yes | Yes | Yes |
| Call notifications | Yes | Yes | No | Yes | Yes |
| Waterproof | Yes | Yes | No | Yes | Yes |
| Battery life | 5+ days | 5 days | 10-14 days | 2 days | 7-10 days |
| Dimensions, weight | 21.1mm, 26g | 34mm, 51g | 35.5x28x9.65mm, 8g | 11x33mm, 60g | 21.1mm, 24g |
| FULL REVIEW | TINYURL.COM/PCKV4SU | TINYURL.COM/083DR47 | TINYURL.COM/PT2TC6F | TINYURL.COM/LHMQ2AC | TINYURL.COM/PFMQ9KH |

| Best activity trackers | 6 | 7 PC ADVISOR RECOMMENDED | 8 | 9 PC ADVISOR RECOMMENDED | 10 |
|---|---|---|---|---|---|
| | Basis Peak | Xiaomi Mi Band | Jawbone Up 2 | Jawbone Up Move | Jawbone Up24 |
| Price | £169 inc VAT | £29 inc VAT | £89 inc VAT | £39 inc VAT | £99 inc VAT |
| Website | En-gb.mybasis.com | Mobilefun.co.uk | Jawbone.com | Jawbone.com | Jawbone.com |
| Overall rating | ★★★½☆ | ★★★★★ | ★★★★☆ | ★★★★☆ | ★★★½☆ |
| Compatibility | iOS, Android | iOS, Android | iOS, Android | iOS, Android | iOS, Android |
| Display | E-Ink | No | No | No | No |
| Pedometer | Yes | Yes | Yes | Yes | Yes |
| Heart-rate monitor | Yes | No | No | No | No |
| Sleep tracking | Yes | Yes | Yes | Yes | Yes |
| Alarm | No | Yes | Yes | No | Yes |
| Third-party app synching | No | No | Yes | Yes | Yes |
| Call notifications | Yes | Yes | No | No | No |
| Waterproof | Yes | Yes | Splashproof | Splashproof | Splashproof |
| Battery life | 4 days | 30 days | 7 days | Six months, non-rechargable | 7 days |
| Dimensions, weight | 33x43x10mm, 51g | 157-205mm, 13g | 220x11.5x3-8.5mm, 25g | 27.6x27.6x9.8mm, 6.8g | S: 19g, M: 22g, L: 23g |
| FULL REVIEW | TINYURL.COM/LHMQ2AC | TINYURL.COM/QZ3YVCR | TINYURL.COM/PHT98ZK | TINYURL.COM/PFXQFNE | TINYURL.COM/ND8YMB8 |

## Best power banks





| | 1 PC ADVISOR GOLD | 2 PC ADVISOR RECOMMENDED | 3 | 4 PC ADVISOR RECOMMENDED | 5 |
|---|---|---|---|---|---|
| | **Zendure A2 (2nd gen)** | **Xiaomi 10,000mAh** | **iHarbot Power Bank MS024** | **Anker Astro Mini** | **Intocircuit Power Castle** |
| Price | **£25 inc VAT** | **£11 inc VAT** | **£7.50 inc VAT** | **£13 inc VAT** | **£22 inc VAT** |
| Website | Zendure.com | Mi.com/en | Amazon.co.uk | Ianker.com | Hisgadget.com |
| Overall rating | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ | ★★★★½ |
| Capacity | 6700mAh | 10,000mAh | 5000mAh | 3200mAh | 11200mAh |
| Input | 1x 7.5W Micro-USB | 1x 10W Micro-USB | 1x 10.5W Micro-USB | 1x 4W Micro-USB | 1x 5W Micro-USB |
| Outputs | 1x 10.5W USB | 1x 10.5W USB | 1x 10W USB | 1x 5W USB | 1x 10.5W USB, 1x 5W USB |
| Auto-on/-off | Yes | Yes | Auto-on | No | Auto-on |
| Passthrough charging | Yes | Yes | Yes | No | Yes |
| Status indicator | 4 LEDs | 4 LEDs | 4 LEDs | No | LCD screen |
| LED flashlight | No | No | No | No | Yes |
| Carry case | Yes | No | No | Yes | Yes |
| Dimensions | 93x48x23mm | 91x60.4x22mm | 118x11.6x63mm | 92x23x23mm | 110x71x22mm |
| Weight | 137g | 207g | 150g | 80g | 280g |
| Warranty | 1 year | 1 year | 18 months | 18 months | 1 year |
| FULL REVIEW | TINYURL.COM/NGCNO5F | TINYURL.COM/NFQZOCB | TINYURL.COM/PVO2LEC | TINYURL.COM/PZHUHJO | TINYURL.COM/P5M9NKE |

## Best desktop chargers





| | 1 PC ADVISOR RECOMMENDED | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| | **iClever USB Travel Charger** | **Zendure Turbo Charger** | **Olixar Smart IC Charger** | **Inateck USB Charger** | **Lumsing 5-Port Charger** |
| Price | **£20 inc VAT** | **£25 inc VAT** | **£34 inc VAT** | **£15 inc VAT** | **£8 inc VAT** |
| Website | Hisgadget.com | Zendure.com | Mobilefun.co.uk | Inateck.com | Lumsing.com |
| Overall rating | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★★☆ | ★★★☆☆ |
| Max output | 50W | 40W | 50W | 35W | 30W |
| Outputs: USB 1 | 12W USB | 12W USB | 12.5W USB | 10.5W USB | 10W USB |
| USB 2 | 12W USB | 12W USB | 12.5W USB | 10.5W USB | 10W USB |
| USB 3 | 12W USB | 12W USB | 12.5W USB | 5W USB | 10W USB |
| USB 4 | 12W USB | 12W USB | 12.5W USB | 5W USB | 5W USB |
| USB 5 | 12W USB | 12W USB | 12.5W USB | 5W USB | 5W USB |
| USB 6 | 12W USB | N/A | 12.5W USB | N/A | N/A |
| Colours available | Black | Black, white | White | Black | Black |
| Dimensions | 100x69x27mm | 97x60x27mm | 100x69x26mm | 100x55x20mm | 136x68x30mm |
| Weight | 180g | 166g | 189g | 340g | 422g |
| Warranty | 1 year | 1 year | 2 years | 1 year | 1 year |
| FULL REVIEW | TINYURL.COM/MPA4DWC | TINYURL.COM/NKYNJ7P | TINYURL.COM/OCZXK93 | TINYURL.COM/KBXUHDF | TINYURL.COM/LK22OGY |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